VOLUME XXX NUMBER ONE

The NATIONAL GEOGRAPHIC MAGAZINE

JULY, 1916

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With 5 Illustrations

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A Hamilton's Record on Pike's Peak

"From a difference of hot summer at the bottom to the arctic regions at the top, my Hamilton gained just three seconds a month, from February to August, or a total of twenty-one seconds only on the whole job of construction," writes A. G. Allan, Chief Engineer of the Pike's Peak Highway, whose picture is shown here.

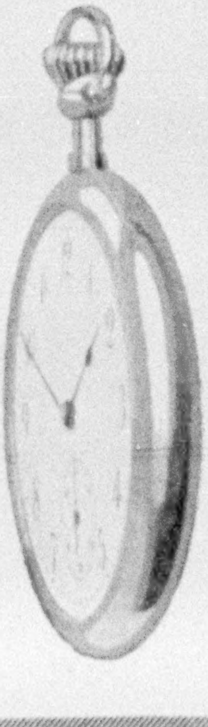
It is literally after a Hamilton Watch is *made*, that work vital to its accuracy under varying conditions begins. The delicate mechanism must be adjusted to heat and cold, or such a record as the one above would be out of the question. And "heat and cold" is only one of a series of adjustments necessary to Hamilton standards of accuracy.

Hamilton Watch

"The Watch of Railroad Accuracy"

Records of accuracy like this one (phenomenal, except when considered as the work of a Hamilton) explain why the Hamilton is preferred by scientific men and by railroad conductors and engineers. It meets their most exacting requirements.

Ask your jeweler to show you the various Hamilton models. There are thirty in all, for both men and women. They range in price from $12.25 for movement alone ($13.00 in Canada) to $150.00 for the superb Hamilton Masterpiece in 18k extra heavy gold case. Thin models at $28.00, $40.00, $55.00 and up. Ladies' Bracelet Watches at $30.00 and $45.00. All have Hamilton Accuracy, Beauty and Durability.



Write for Hamilton Watch Book—"The Timekeeper"

It pictures and describes all Hamiltons and tells interesting facts about watch making. A reading of this book gives you a new perspective on watches and watch buying, and may save you from buying the kind of watch not suited to your requirements.

HAMILTON WATCH COMPANY, Dept. 35, Lancaster, Pennsylvania

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It means some forethought—but no more money—to specify Yale locks and hardware—and to get Yale.

When you specify Yale locks and hardware, you do far more than insure artistic fitness and decoration. You make certain of locking *security*, which, after all, is the first consideration.

The name Yale on locks and hardware is a guarantee of dependability and durability and the assurance of correct design and equitable price.

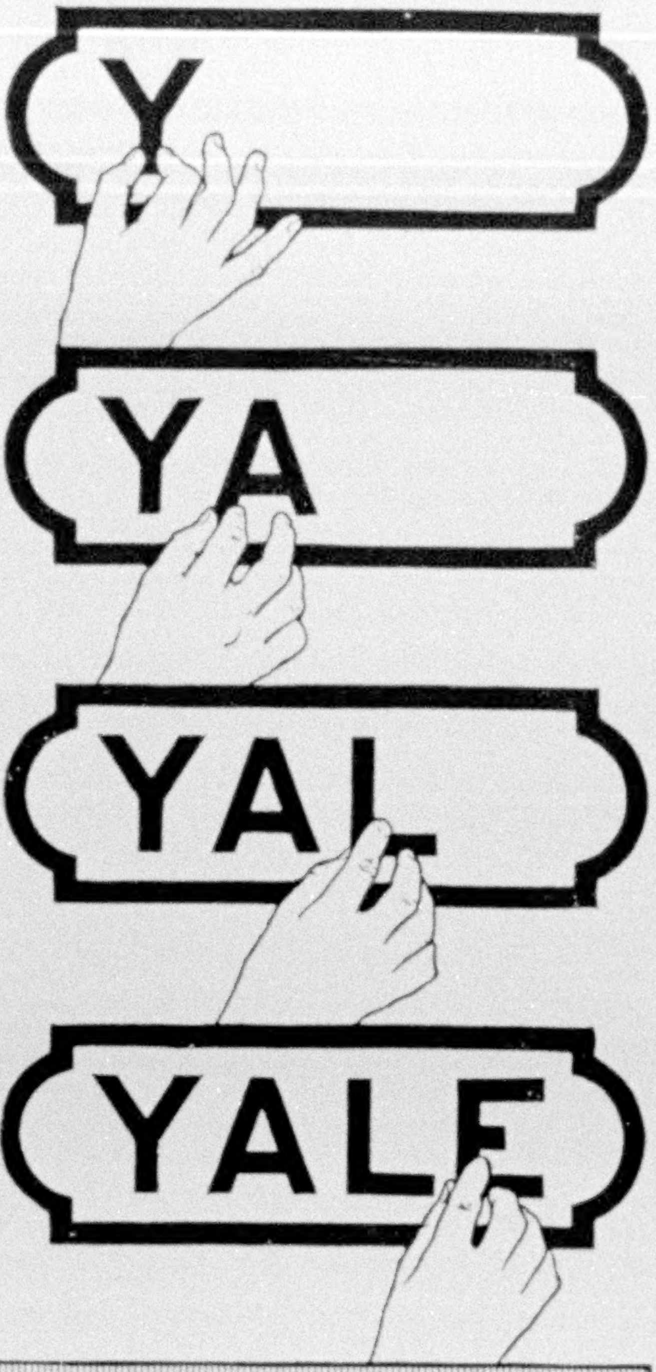
See **the name Yale or you won't** ***get*** **Yale**

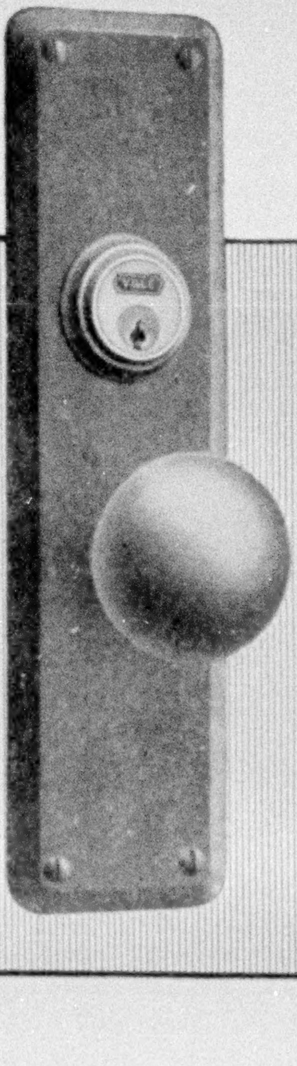
FOR SALE BY THE HARDWARE TRADE

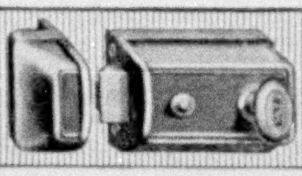
Write for the Yale book, "Locks and Hardware"

THE YALE & TOWNE MFG. CO.

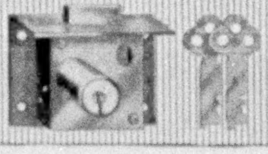
9 East 40th St. New York



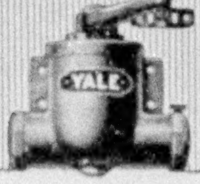




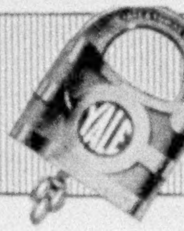
That door lock you are doubtful about—reinforce it with a Yale Night Latch.



To insure real security for the many private drawers and doors—Yale Cabinet Locks.



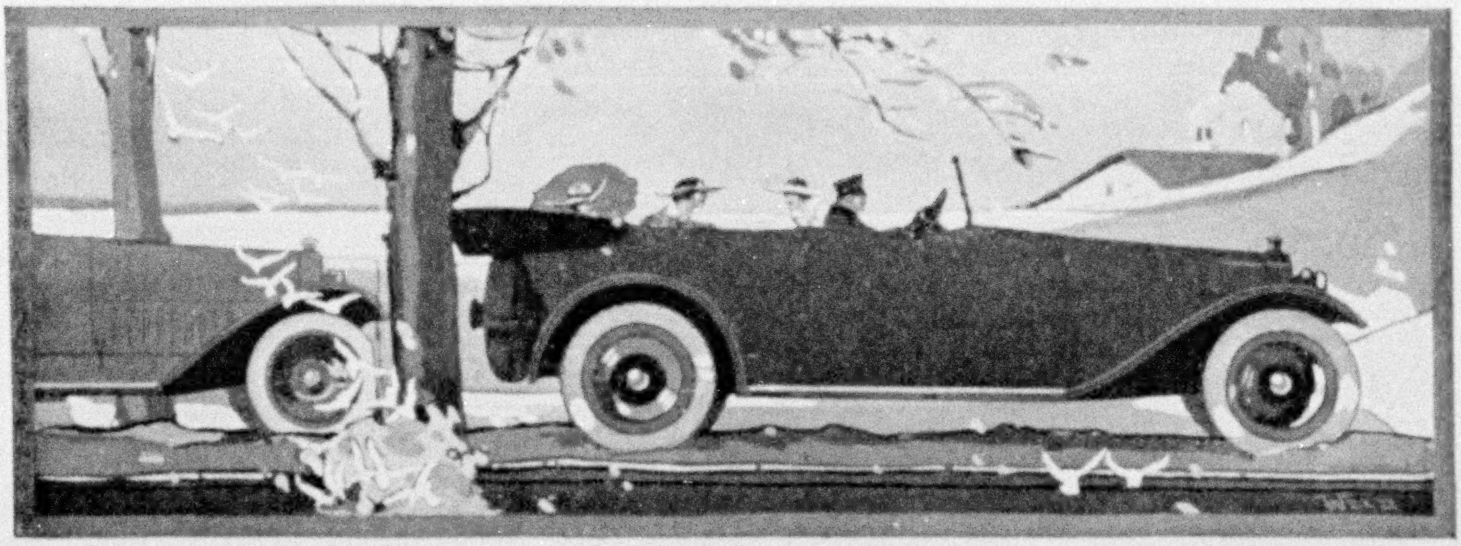
An ingenious little mechanism with almost human intelligence—the Yale Door Closer.



You will appreciate the protection of a real padlock when you buy a *Yale*.

Mitchell MID-YEAR SIX

$1325 F. O. B. Racine
26 Extra Features



The Final Result
Of a Man Whom You'll Respect

The Mid-Year Mitchell shows the finished effort of John W. Bate, the efficiency engineer.

It comes from a factory which he designed. It is built by methods which he worked out to reduce factory costs to the minimum. And the car itself is the 17th model built under his direction. It combines all his 700 improvements. It typifies his ideal of mechanical perfection.

John W. Bate has for 30 years held the foremost place in efficiency as applied to machinery building. And this New Mitchell, in a hundred ways, shows a genius that you'll respect.

It Seems a Lavish Car

The Mid-Year Mitchell looks extravagant. It is big and handsome and roomy. It combines in one car all the new touches, all the best ideas of the year. Before its completion our experts examined 257 this-year models.

It has 26 costly extras—things which other cars omit. And each is a feature you'll want.

The car is finished in 22 coats. The upholstery is French-finished leather. The springs are 10 inches deep.

For ease of driving it has ball-bearing steering gear. It has a unique and easy control. It has an engine-driven tire pump. It has an engine primer at the driver's hand.

For ease of riding it has Bate cantilever springs. You never knew such a comfortable car.

Yet note the Mitchell price. No other car of this size and power and class sells as low as this does. That is one result of Mr. Bate's efficiency.

Big Margins of Safety

The Mitchell is a light car, weighing under 3000 pounds. It is a marvel of economy in fuel. Yet every part is designed to be 50 per cent stronger than necessary.

Instead of castings, Mr. Bate uses tough, light steel, three times as strong as castings. He uses much Chrome-Vanadium steel.

One Bate-built Mitchell has run 218,732 miles. Six of them have averaged 164,372 miles each. That's over 30 years of ordinary service.

The Mitchell is built for a lifetime car. It is almost trouble-proof. Those are other results of Mr. Bate's genius for efficiency.

When you buy a high-grade car to keep we believe you will want the Mitchell. We know you will if you learn the facts.

No other car is built by these methods. No other car embodies all these improvements. No other car is so complete.

Go to your Mitchell dealer and see what Mr. Bate has done for you and yours by his 13 years of work on this car and this plant.

MITCHELL-LEWIS MOTOR COMPANY
Racine, Wis., U. S. A.

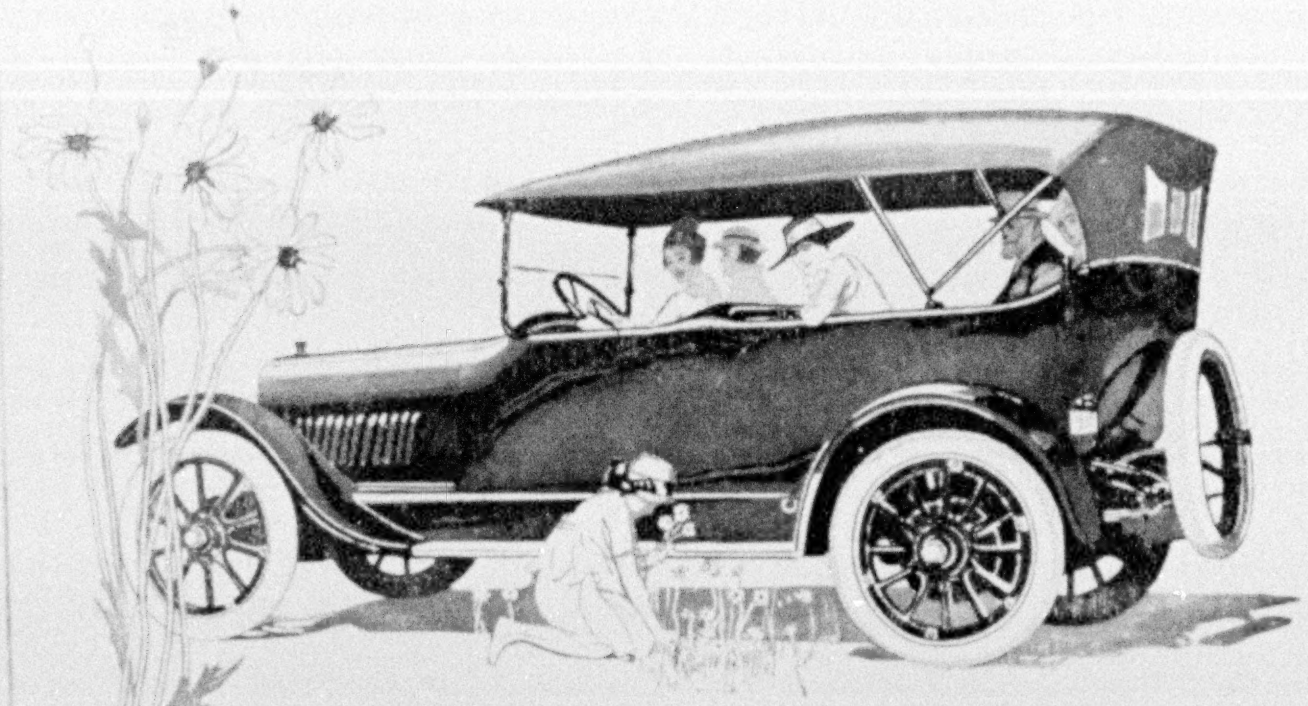
$1325 f. o. b. Racine

For Five-Passenger Touring Car or Three-Passenger Roadster

Seven-Passenger Touring Body, $35 Extra

High-speed economical Six—48 horsepower—127-inch wheelbase. Complete equipment, including 26 extra features.

There's a Mitchell Dealer in Your Town



CHANDLER SIX
$1295

A Refined Motor Car

THE Chandler Six is built to serve discriminating families as a pleasure car. It will, if you ask it, go faster than ninety-nine out of any hundred car owners would ever want or dare to drive, but it is *not* a racing car. Its motor has power ample to take the car, loaded, anywhere that any automobile can go, but it is *not* a trick car. It is a beautifully constructed motor car with the finest and most attractive of the season's bodies.

Most flexible and easily handled, full of life and go, richly upholstered in genuine leather, economical in operation, and free from any hint of experimentation or untried theory, the Chandler is deservedly the most popular medium-priced car in the whole American market this year.

Seven-Passenger Touring Car - $1295
Four-Passenger Roadster - - $1295
(F. O. B. Cleveland, Ohio)

Write for New Catalog and name of nearest Chandler Dealer

Chandler Motor Car Company

1407-1437 E. 131st St., Cleveland, Ohio

New York Office, 1884 Broadway   Cable Address, "Chanmotor"

Summer's Best

Roses and Berries and Puffed Grains

The three belong together.

The berry dish becomes doubly delicious when these bubbles of grain are included.

And a flower-decked table is twice as attractive when it carries Puffed Wheat or Rice.

These the Supreme Foods

These bubbles of grain are the daintiest foods that breakfast ever knew.

All users, we think, concede that.

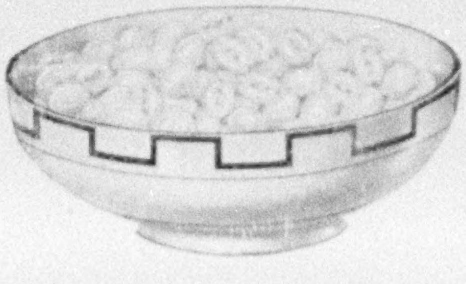
They are whole-grain foods—complete foods—unrobbed of one valuable atom.

They are the only cereals with every food cell exploded—the only foods made by Prof. Anderson's process, so that every granule feeds.

So these stand supreme among ready-cooked cereals, as scientific foods and as dainties. Folks who like good foods and folks who want right foods find their ideals in these puffed grains.

Puffed Wheat	Except in	12c
Puffed Rice	Far West	15c

Corn Puffs—Bubbles of Corn Hearts—15c



A Sunset Dish

These are all-day foods—these Puffed Grains—not mere breakfast greetings.

Thousands of business men eat them for luncheon—for their whole-grain nutrition without tax to the stomach. And millions of dishes—in bowls of milk—are served for the same reasons at bedtime.

The grains are crisp, airy bubbles, four times as porous as bread. The flavor is fascinating. The substance is clear nutrition? Do you know anything else so suitable for use in a dairy dish.

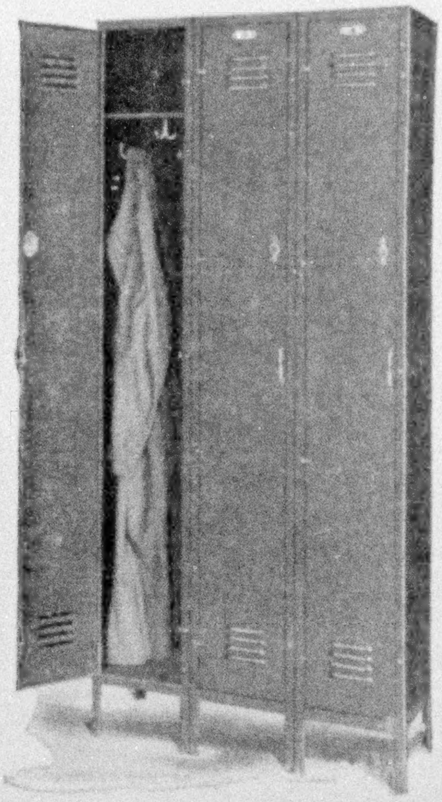
THE QUAKER OATS COMPANY

SOLE MAKERS

(1343)

"Mention the Geographic—It identifies you."

DURAND
Steel Lockers



FACTORY men appreciate an equipment of Durand Steel Lockers, which provide a cleanly, sanitary protection for outer clothing and other belongings during working hours.

Durand Steel Lockers are equipped with Yale locks, insuring absolute security of contents. They are fireproof, vermin-proof, and well ventilated—strong and durable.

Durand Steel Lockers promote satisfaction, order and efficiency in the factory.

We will gladly prepare plans, specifications, and estimates on Steel Locker or Steel Rack Equipment.

DURAND STEEL LOCKER CO.

1507 Ft. Dearborn Bk. Bldg. Chicago — 907 Vanderbilt Bldg. New York

Tight because it's shaped right.

Dust
Is an Abomination

STREET dust is dangerous. It is always laden with infection and disease. At the very least, it annoys. It soils curtains, draperies, decorations and furniture—entails the expense of frequent cleanings and washings.

You know very well you can't shut out dust by merely closing your windows. It penetrates those cracks around the sashes—sifts in and settles over everything. The only way to overcome this condition effectively is with

MONARCH
METAL WEATHER STRIPS

No dust or dirt, draughts or damp air can get through windows or doors fitted with Monarch Metal Weather Strips. They are the only real interlocking weather strips made. They slide or engage metal to metal so that no leakage is caused by wear. They never lose contact whatever shrinkage or warping may occur in sash, door or frame, and always allow perfect freedom of movement in opening or closing. They are adaptable to any kind of opening—are inconspicuous—require no attention after once installed.

Consult Your Architect. He knows all about MONARCH Strips. Why they are more durable and efficient than any others.

Licensees or their representatives everywhere, who will call on you by appointment and give demonstration and estimate of cost of installation without any obligation on your part.

Write us for FREE illustrated booklet describing Monarch Metal Weather Strips

Monarch Metal Weather Strip Company
4127 Forest Park Boulevard
St. Louis, Mo.

Residence of Albert H. Loeb, Esq., Chicago, Ills.

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Equipped by W. L. Van Dame, Chicago, Ill.

Irate Customer—"Send the Proprietor here." Conciliating Waiter—"Sorry sir, he's out to lunch."

Experience teaches us what we don't want as well as what we want.

Kelly-Springfield
Automobile Tires—Hand Made

FEW buy Kelly-Springfield Tires until they have had experience with other tires and learned to measure tire values in terms of mileage rather than initial cost.

Every Kelly-Springfield Tire you see is a certificate attesting: "This is an experienced motorist."

It testifies: "This man has driven other cars, measured the wearing qualities of tires, and learned to purchase mileage at the minimum cost."

The reason is simple. Kelly-Springfield Tires cost more. They are hand-made—to be sure that mileage is built into them. They are excess-mileage tires.

So they are found on new cars of the better class only, as special or optional equipment when the car buyer knows tire values and appreciates that the car manufacturer has paid the price necessary to provide the best service to be had.

Kelly-Springfield Tires cannot be made to meet the price allowed for tire equipment on lower priced cars, when buyers expect only guaranteed mileage. So they are not found on cars until the car buyer has learned to ignore initial cost and guarantees and considers cost per mile.

Because the public expects a guarantee, Kelly-Springfield Tires are guaranteed for 5,000, 6,000, and 7,500 miles, according to type. But they yield 8,000, 10,000, and often greater mileage. Cases where adjustments are necessary are rare.

Few who have once used Kelly-Springfield tires ever change to other tires, except when they buy new cars equipped with other tires chosen by the manufacturer.

Kelly-Springfield Tire Co.
Factories in Akron and Wooster, Ohio
Executive Offices:
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Send ten cents for the new game, "Going to Market"

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Turn Customers into Friends

You are doing both us and your friends a kindness by recommending White House Coffee and Tea.

"NONE BETTER AT ANY PRICE"

Has passed the Westfield Test and successfully competed with all other so-called "World's Best" for a Quarter Century. Sold for our protection and yours in small-sized sealed all-tin cans only—never in Bulk.

DWINELL-WRIGHT COMPANY

BOSTON *Principal Coffee Roasters* CHICAGO

"Mum"

(as easy to use as to say)

takes all the odor out of perspiration

and prevents hot weather embarrassment. A summertime necessity—a year-round comfort, especially to women.

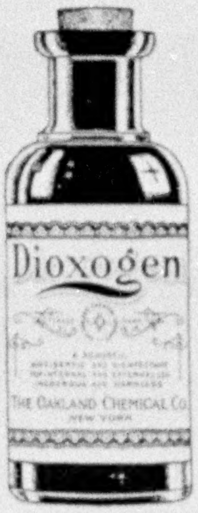
Applied in a minute. Harmless to skin and clothing.

25c—Sold by 9 out of 10 drug- and department-stores.

"MUM" MFG CO 1106 Chestnut St Philadelphia

WHEN all but the members of the medical profession were ignorant of the dangers of infection, small injuries grew into big ones, little hurts became serious and blood poison was a common occurrence.

Today every household can be immune from these dangers.



Dioxogen prevents infections.

It keeps little or big hurts from becoming dangerous.

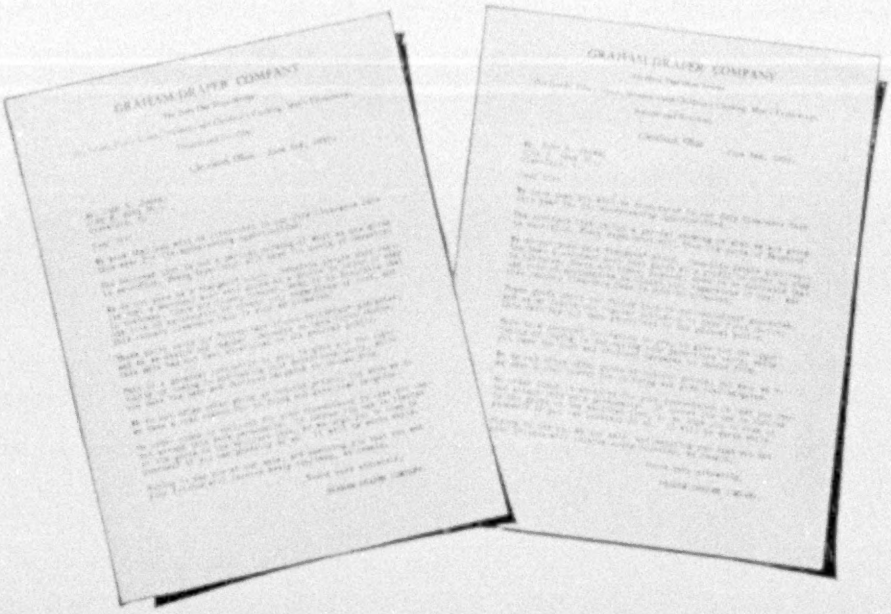
Use it for cuts, scratches, burns or any injury big or little where the skin is broken.

AT ALL DRUGGISTS

The Oakland Chemical Co.

10 Astor Place - New York

"Mention the Geographic—It identifies you."



Which is the Imitation?

Neither is an imitation. One was typewritten on a typewriter and the other was typewritten on the Multigraph.

The Multigraph isn't an imitator—it does *real* typewriting and *real* printing.

The only difference between the Multigraph and the typewriter is that the Multigraph cannot produce a single letter as cheaply as a typewriter, while a typewriter cannot produce a hundred or a thousand letters as cheaply as the Multigraph.

The Multigraph prints from typewriter type, through a ribbon, just like a typewriter, only it prints a whole letter at a time instead of a single character, and it doesn't make mistakes.

And it's just as clever about printing other things besides letters—forms, folders, catalogs, and the like—from other kinds of type and electrotypes, and with printer's ink instead of a ribbon. It saves time, "make-ready," and expensive stock. You print only what you need, when you need it, and in the privacy of your own shop or office.

Will you give us the opportunity to discuss with you the chances for Multigraph saving in your business?

THE AMERICAN MULTIGRAPH SALES COMPANY
1821 East 40th Street Cleveland, Ohio

"You can't buy a Multigraph unless you need it"

MULTIGRAPH
1821 E. 40th St., Cleveland

Prove to me, if you can, that the Multigraph can save time and money in my business.

Name__________

Official Position__________

Firm__________

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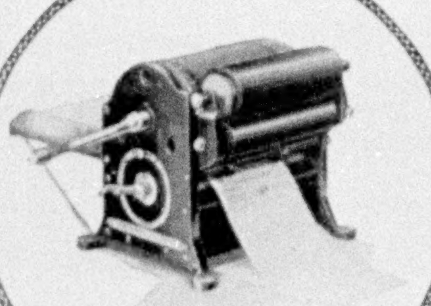
Multigraph Junior—A completely equipped hand-operated machine for producing typewritten letters and forms in quantities, $200. Easy payments.



THE MULTIGRAPH

"Never put a cheap roof on a good house."

The roof is the most conspicuous and most vulnerable part of every house—any substitute for the best is poor economy.

A Worcester, Massachusetts, Residence Roofed with Small Size

Monson Lustre Slate is the strongest, highest-priced, and most beautiful blue slate known. Color, an unfading, "lustrous," deep water blue-gray; admirable with gray stone, white stucco, etc.

MONSON LUSTRE SLATE

A good slate roof adds $500 to the selling value of any good building. The difference in cost between wood or plastic shingles and high-grade slate is negligible compared to the additional worth and the fire-proof protection it affords.

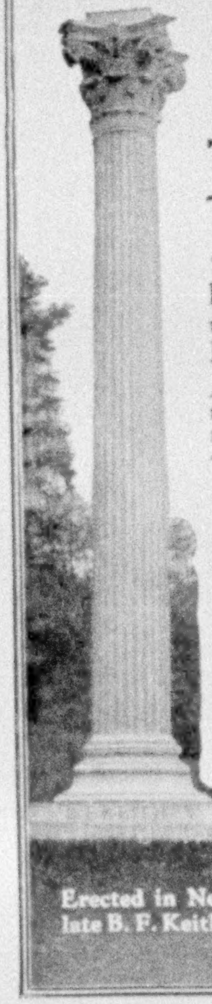
If Interested for Samples, Pictures of Other Roofs, Etc., Address

MONSON LUSTRE SLATE COMPANY, 194 Devonshire St., Boston, Mass.

Successor to Maine Slate Co., of Monson

BARRE GRANITE

The Ideal Memorial Stone



NO matter what cemetery you visit, you will find enduring memorials that have been cut from the unequaled product of the granite quarries at Barre, Vermont.

All Barre Granite is of that firm, sturdy texture which resists the elements and makes it truly the Rock Everlasting.

To avoid substitution specify that every part of memorial be of Barre Granite. Dealers will furnish full information.

Barre Granite is ideal for columns and other ornamental building purposes and is sold by best dealers everywhere. Write for illustrated booklet, "Memorial Masterpieces."

BARRE QUARRIERS AND MANUFACTURERS ASS'N

Dept. 8 BARRE, VT.

"The Granite Center of the World"

Erected in Newton Cemetery, Newton, Mass., to the late B. F. Keith, Proprietor of the Keith Theatre Circuit

STERLING

Singing quality—the near approach to the effect of the human voice—has always been one of the most admirable characteristics of the Sterling piano. For accompaniments, the sympathetic effect is as inspiring to the singer as its big golden tone is helpful and pleasing to the pianist.

Cased beautifully; priced moderately. Delivered direct from factory or through our authorized dealers. BOOKS FREE.

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Founded 1866 by Chas. A. Sterling

Pathfinder the "GREAT"

King of Twelves

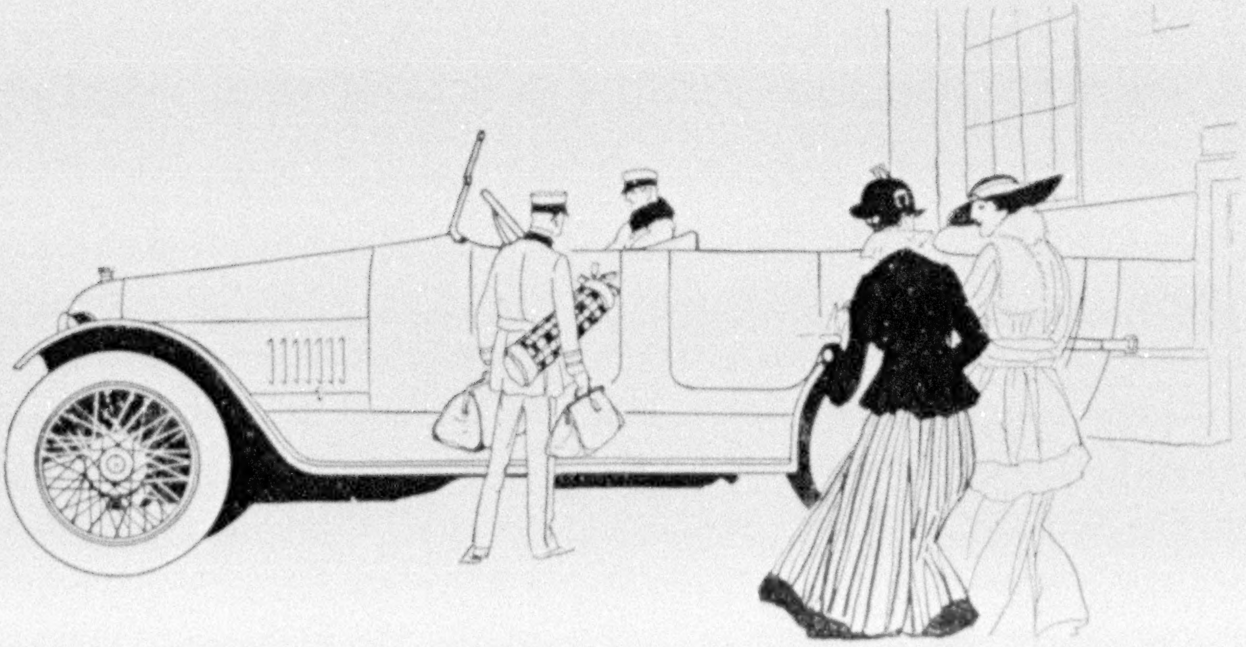
Designed by Forloke
Built in the shops of Pathfinder

A great deal more than money is involved in the purchase of a Pathfinder.

Love of luxury and beauty, cultivated taste and keen appreciation of what is best in motor-car construction are important factors in the equation.

Seven Passenger Touring Car, $2750
Clover Leaf Roadster with Concealed Top, $2900
Special Enclosed Bodies up to $4800
All f. o. b. Indianapolis
Complete details and catalog on request.

The Pathfinder Company
Indianapolis, U. S. A.



Hess-Ives Hicro Camera

A CAMERA that reproduces on a permanent print—as many as you like—nature's own colors. It registers every shade and tone in color just as the eye sees it. Takes portraits with the same degree of fidelity to colors as it does landscapes or seascapes. Any amateur of ordinary experience will readily understand it.

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1201 Race Street
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FOUNDERS AND WORKERS IN BRONZE, WROUGHT IRON AND OTHER METALS

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FLOOR AND TABLE LAMPS IN CARVED WOOD, IRON AND SILVER

ANDIRONS AND FIRE-PLACE FITTINGS, CLOCKS, BOOK-ENDS AND WRITING DESK SETS

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WORKS AND SHOWROOMS — 16-18 EAST 40TH NEW YORK

The people we meet are mostly neutral, as if a kind Providence had fixed it so that they could fade into the background.

And then along comes someone who flashes on your mind's eye and shocks you into the realization that this is a living person—an individual—no mere cog in the wheel of existence.

When such a man enters the office, be it ever so quietly, everybody knows he has come in. When he speaks, people listen, without eye-wandering, until he has finished.

PERSONALITY.

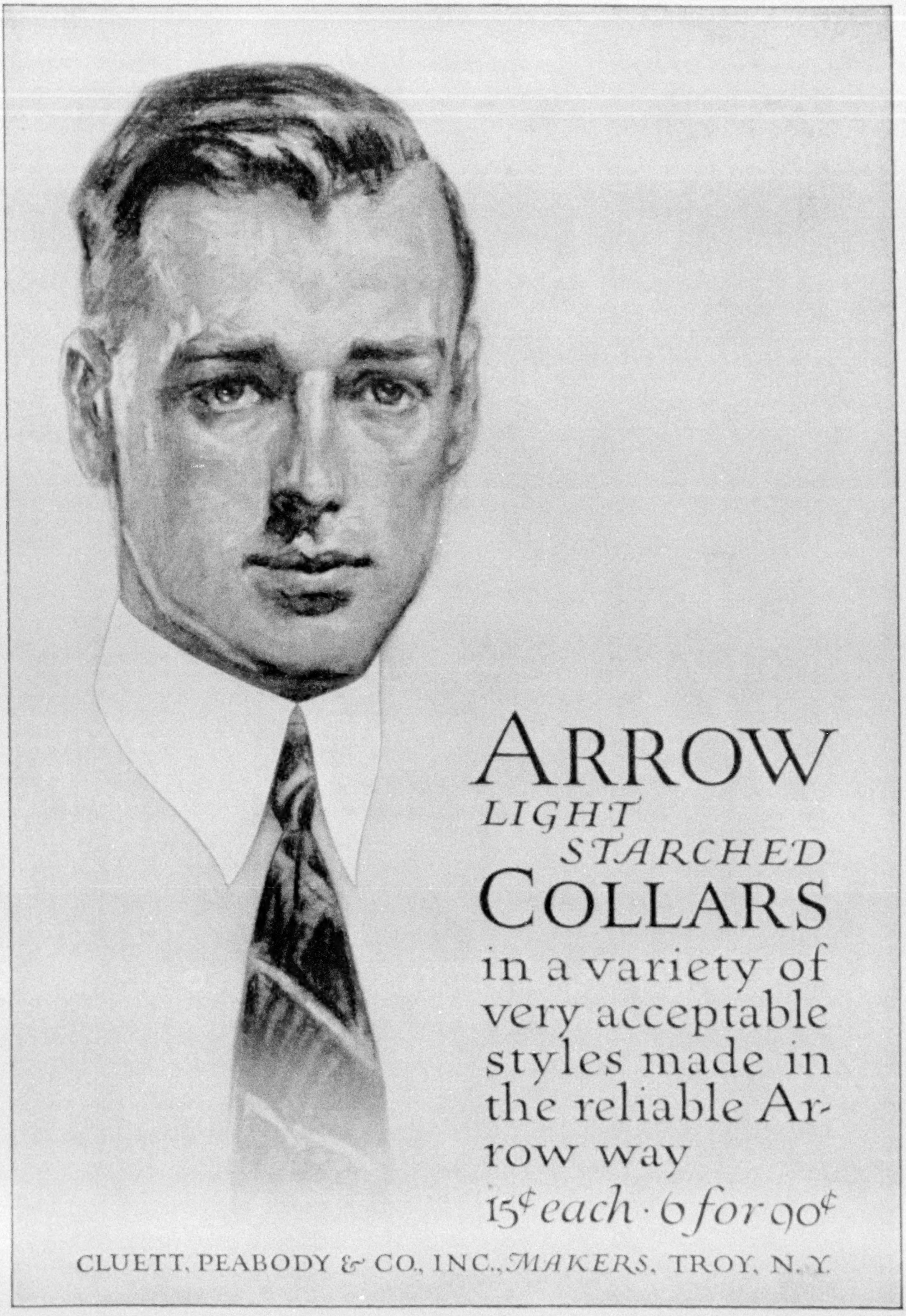
Is such a thing true of a cigarette?

Smoke one Rameses, and see. They call it "The Aristocrat of Cigarettes."

You know the saying?

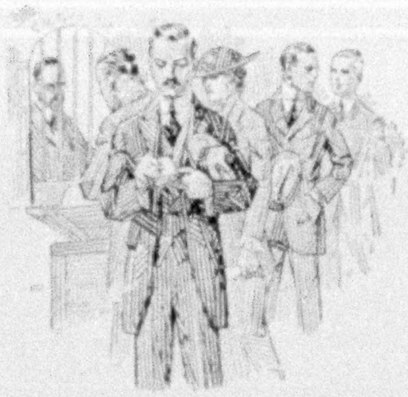
"Nobody ever changes from Rameses."

STEPHANO BROS., Inc.
PHILADELPHIA


ARROW
LIGHT
STARCHED
COLLARS
in a variety of very acceptable styles made in the reliable Arrow way
15¢ each · 6 for 90¢
CLUETT, PEABODY & CO., INC., MAKERS, TROY, N. Y.

XUM

You People on Salaries— Buy a $100 Bond



Quit living from week to week, or from month to month! Look your future square in the eye. Don't dodge. Tell yourself that you *know* you ought to be saving!

Start! That's the big move! Buy a $100 Municipal Bond. *You* can do it no matter what your income. Our Partial Payment Plan makes this easily possible.

Our Municipal Bonds are preferred by experienced investors because of their Security, Yield, Marketability and freedom from income tax. Our free book N7 "Buying Bonds on Partial Payment," will interest you. Write for it today.

William R. Compton Company

Municipal Bonds

"Over a Quarter Century in this Business"

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14 Wall Street
Chicago
105 S. La Salle Street

St. Louis
408 Olive Street
Cincinnati
102 Union Trust Bldg.

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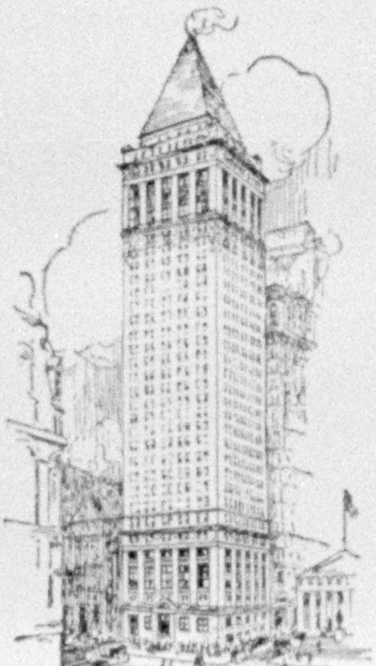

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THE NATIONAL GEOGRAPHIC MAGAZINE

THE LUSTER OF ANCIENT MEXICO

The following article is abstracted from the celebrated classic, "History of the Conquest of Mexico," by William H. Prescott

OF ALL that extensive empire which once acknowledged the authority of Spain in the New World, no portion, for interest and importance, can be compared with Mexico, and this equally, whether we consider the variety of its soil and climate; the inexhaustible stores of its mineral wealth; its scenery, grand and picturesque beyond example; the character of its ancient inhabitants, not only far surpassing in intelligence that of the other North American races, but reminding us, by their monuments, of the primitive civilization of Egypt and Hindostan; or, lastly, the peculiar circumstances of its conquest, adventurous and romantic as any legend devised by Norman or Italian bard of chivalry.

The country of the ancient Mexicans, or Aztecs, as they were called, formed but a very small part of the extensive territories comprehended in the modern Republic of Mexico. Its boundaries cannot be defined with certainty. They were much enlarged in the latter days of the empire, when they may be considered as reaching from about the eighteenth degree north to the twenty-first, on the Atlantic, and from the fourteenth to the nineteenth, including a very narrow strip, on the Pacific. In its greatest breadth it could not exceed five degrees and a half, dwindling, as it approached its southeastern limits, to less than two.

It covered probably less than 16,000 square leagues. Yet such is the remarkable formation of this country that, though not more than twice as large as New England, it presented every variety of climate, and was capable of yielding nearly every fruit found between the Equator and the Arctic Circle.

All along the Atlantic the country is bordered by a broad tract, called the *tierra caliente,* or hot region, which has the usual high temperature of equinoctial lands. Parched and sandy plains are intermingled with others of exuberant fertility, almost impervious from thickets of aromatic shrubs and wild flowers, in the midst of which tower up trees of that magnificent growth which is found only within the tropics.

SCENERY GRAND AND TERRIBLE

After passing some twenty leagues across this burning region, the traveler finds himself rising into a purer atmosphere. His limbs recover their elasticity. He breathes more freely, for his senses are not now oppressed by the sultry heat and intoxicating perfumes of the valley. The aspect of nature, too, has changed, and his eye no longer revels among the gay variety of colors with which the landscape was painted there. The vanilla, the indigo, and the flowering cacao groves disappear as he advances. The sugarcane and the glossy-leaved banana still accompany him; and, when he has ascended about 4,000 feet, he sees in the unchanging verdure and the rich foliage of the liquid-amber tree that he has

COLIMA, ONE OF MEXICO'S ACTIVE VOLCANOES

On the sides of this great safety valve of the big earth furnace are numerous ice camps. Hail forms and falls so continuously here that the peons gather up the ice-stones, wrap them in straw, and carry them down to the towns on the plain for domestic purposes.

reached the height where clouds and mists settle in their passage from the Mexican Gulf.

He has entered the *tierra templada,* or temperate region, whose character resembles that of the temperate zone of the globe. The features of the scenery become grand and even terrible. His road sweeps along the base of mighty mountains, once gleaming with volcanic fires, and still resplendent in their mantles of snow, which serve as beacons to the mariner, for many a league at sea. All around he beholds traces of their ancient combustion, as his road passes along vast tracts of lava, bristling in the innumerable fantastic forms into which the fiery torrent has been thrown by the obstacles in its career. Perhaps at the same moment as he casts his eye down some steep slope or almost unfathomable ravine on the margin of the road he sees their depths glowing with the rich blooms and enameled vegetation of the tropics. Such are the singular contrasts presented, at the same time, to the senses in this picturesque region!

Still pressing upward, the traveler mounts into other climates, favorable to other kinds of cultivation. The yellow maize, or Indian corn, as we usually call it, has continued to follow him up from the lowest level; but he now first sees fields of wheat and the other European

grains brought into the country by the Conquerors. Mingled with them he views the plantations of the aloe or maguey (*agave Americana*), applied to such various and important uses by the Aztecs. The oaks now acquire a sturdier growth, and the dark forests of pine announce that he has entered the *tierra fria*, or cold region, the third and last of the great natural terraces into which the country is divided.

THE BROAD MEXICAN TABLE-LAND

When he has climbed to the height of between 7,000 and 8,000 feet, the weary traveler sets his foot on the summit of the Cordillera of the Andes—the colossal range that, after traversing South America and the Isthmus of Darien, spreads out as it enters Mexico into that vast sheet of table-land, which maintains an elevation of more than 6,000 feet, for the distance of nearly 200 leagues, until it gradually declines in the higher latitudes of the north.

The air is exceedingly dry; the soil, though naturally good, is rarely clothed with the luxuriant vegetation of the lower regions. It frequently, indeed, has a parched and barren aspect, owing partly to the greater evaporation which takes place on these lofty plains, through the diminished pressure of the atmosphere; and partly, no doubt, to the want of trees to shelter the soil from the fierce influence of the summer sun.

In the time of the Aztecs the table-land was thickly covered with larch, oak, cypress, and other forest trees, the extraordinary dimensions of some of which, remaining to the present day, show that the curse of barrenness in later times is chargeable more on man than on nature. Indeed, the early Spaniards made as indiscriminate war on the forest as did our Puritan ancestors, though with much less reason. After once conquering the country they had no lurking ambush to fear from the submissive, semi-civilized Indian, and were not, like our forefathers, obliged to keep watch and ward for a century. This spoliation of the ground, however, is said to have been pleasing to their imaginations, as it reminded them of the plains of their own Castile, where the nakedness of the landscape forms the burden of every traveler's lament who visits that country.

THE WONDERFUL VALLEY OF MEXICO

Midway across the continent, somewhat nearer the Pacific than the Atlantic Ocean, at an elevation of nearly 7,500 feet, is the celebrated Valley of Mexico. It is of an oval form, about 67 leagues in circumference, and is encompassed by a towering rampart of porphyritic rock, which nature seems to have provided, though ineffectually, to protect it from invasion.

The soil, once carpeted with a beautiful verdure, and thickly sprinkled with stately trees, is often bare, and in many places, white with the incrustation of salts, caused by the draining of the waters. Five lakes are spread over the valley, occupying one-tenth of its surface. On the opposite borders of the largest of these basins, much shrunk in its dimensions since the days of the Aztecs, stood the cities of Mexico and Tezcuco, the capitals of the two most potent and flourishing States of Anahuac, whose history, with that of the mysterious races that preceded them in the country, exhibits some of the nearest approaches to civilization to be met with anciently on the North American continent.

Of these races the most conspicuous were the Toltecs. Advancing from a northerly direction, but from what region is uncertain, they entered the territory of Anahuac, probably before the close of the seventh century.

The Toltecs were well instructed in agriculture, and many of the most useful mechanic arts; were nice workers of metals; invented the complex arrangement of time adopted by the Aztecs; and, in short, were the true fountains of the civilization which distinguished this part of the continent in later times. They established their capital at Tula, north of the Mexican Valley, and the remains of extensive buildings were to be discerned there at the time of the Conquest. The noble ruins of religious and other edifices, still to be seen in various parts of New Spain, are referred to this people, whose name, *Toltec*, has passed into a synonym

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GATHERING PRICKLY PEAR FRUIT NEAR THE PYRAMID OF THE SUN: SAN JUAN TEOTIHUACAN, MEXICO

The nopal cactus bears the tuna of the Mexicans and the prickly pear of Americans. The tree is composed of series of oval pads. As one of these pads hardens, it becomes a part of the tree instead of remaining its foliage and fruit. The great pad produces a fruit about the size of a duck egg, covered with fine prickles, as full of seeds as the ordinary fig. It is always cool when plucked. The natives subsist almost entirely on it when they can get it. It means as much to the Mexican *niños* as Georgia watermelon to the American pickaninnies.

TARAHUMARE INDIANS IN CHIHUAHUA CITY, MEXICO

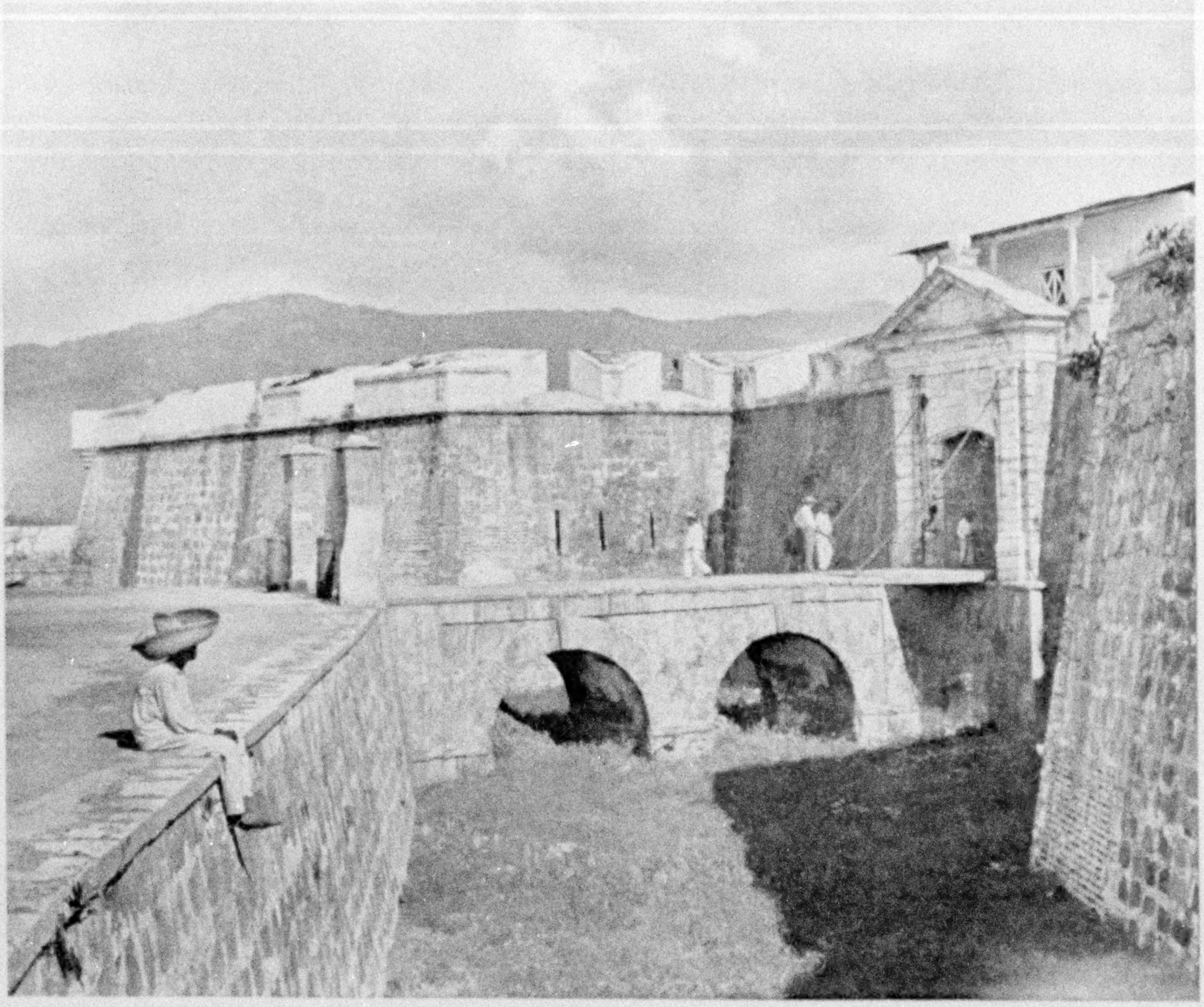
Not even Greece and Rome in the palmiest days of their athletic history produced a race of greater physical endurance than is to be found in the Tarahumare Indians of Mexico. Their favorite pastime is chasing a big ball, which they sometimes do from morning to night. Lumholtz, in his "Unknown Mexico," says they can run down and catch wild horses, and that the women are as good runners as the men.

for *architect*. Their shadowy history reminds us of those primitive races who preceded the ancient Egyptians in the march of civilization, fragments of whose monuments, as they are seen at this day, incorporated with the buildings of the Egyptians themselves, give to these latter the appearance of almost modern constructions.

DID THE TOLTECS BUILD MITLA AND PALENQUE

After a period of four centuries, the Toltecs, who had extended their sway over the remotest borders of Anahuac, having been greatly reduced, it is said, by famine, pestilence, and unsuccessful wars, disappeared from the land as silently and mysteriously as they had entered it. A few of them still lingered behind, but much the greater number, probably, spread over the region of Central America and the neighboring isles; and the traveler now speculates on the majestic ruins of Mitla and Palenque, as possibly the work of this extraordinary people.

The Mexicans, with whom our history is principally concerned, came, also, from the remote regions of the north—the populous hive of nations in the New World, as it has been in the Old. They arrived on the borders of Anahuac, toward the beginning of the thirteenth century, some time after the occupation of the land by the kindred races. For a long time they did not establish themselves in any permanent residence, but continued shifting their quarters to different parts of the Mexican Valley, enduring all the casualties and hardships of a migratory life. On one occasion they were enslaved by a more powerful tribe, but their feroc-



FORTIFICATIONS AT ACAPULCO, MEXICO

Acapulco is one of the principal west coast cities of Mexico, with harbor accommodations for 100 ocean steamships and 200 lighter craft. Bret Harte, in his "Last Galleon," sings of the day in 1641 when the regular yearly galleon was due to arrive in Acapulco, while the limes were ripening in the sun for the sick on board.

ity soon made them formidable to their masters.

THE FOUNDING OF TENOCHTITLAN

After a series of wanderings and adventures, which need not shrink from comparison with the most extravagant legends of the heroic ages of antiquity, they at length halted on the southwestern borders of the principal lake in the year 1325. They there beheld, perched on the stem of a prickly pear, which shot out from the crevice of a rock that was washed by the waves, a royal eagle of extraordinary size and beauty, with a serpent in his talons, and his broad wings opened to the rising sun.

They hailed the auspicious omen, announced by the oracle as indicating the site of their future city, and laid its foundations by sinking piles into the shallows, for the low marshes were half buried under water. On these they erected their light fabrics of reeds and rushes, and sought a precarious subsistence from fishing and from the wild fowl which frequented the waters, as well as from the cultivation of such simple vegetables as they could raise on their floating gardens. The place was called Tenochtitlan, in token of its miraculous origin, though only known to Europeans by its other name of Mexico, derived from their war-god, Mexitli. The legend of its foundation is still further commemorated by the device of the eagle and the cactus, which form the arms of the modern Mexican Republic.

HOUSE IN COUNTRY NEAR CORDOBA

Perhaps three-fourths of Mexico's population has no more of this world's goods than the family in the picture, whose all is contained in this thatched hut and the patch of ground that answers for a garden. Nor does the vast majority know any more than they of creature comforts. Some one has observed that it is no compliment to the well-fed, sleek ox on the Mexican hacienda to say that the half-starved peon drudge is a brother to him.

They gradually increased, however, in numbers, and strengthened themselves yet more by various improvements in their polity and military discipline, while they established a reputation for courage as well as cruelty in war, which made their name terrible throughout the Valley. In the early part of the fifteenth century, nearly a hundred years from the foundation of the city, an event took place which created an entire revolution in the circumstances and, to some extent, in the character of the Aztecs.

A REMARKABLE MILITARY ALLIANCE

Then was formed that remarkable league, which, indeed, has no parallel in history. It was agreed between the States of Mexico, Tezcuco, and the neighboring little kingdom of Tlacopan that they should mutually support each other in their wars, offensive and defensive, and that in the distribution of the spoil one-fifth should be assigned to Tlacopan and the remainder be divided, in what proportions is uncertain, between the other powers.

What is more extraordinary than the treaty itself, however, is the fidelity with which it was maintained. During a century of uninterrupted warfare that ensued, no instance occurred where the parties quarreled over the division of the spoil, which so often makes shipwreck of similar confederacies among civilized States.

The allies for some time found sufficient occupation for their arms in their own valley; but they soon overleaped its rocky ramparts, and by the middle of the fifteenth century, under the first Montezuma, had spread down the sides of the table-land to the borders of the Gulf of Mexico. Tenochtitlan, the Aztec capital,

A SECTION OF THE WALLS OF THE RUINS OF XOCHICALCO, MEXICO

"The stones of the crown and surface are laid upon each other without cement and kept in place by their weight alone; and as the sculpture of a figure is seen to run over several of them, there can be no doubt that the work was cut after the pyramid was erected. Stones 7 feet in length by nearly 3 feet in breadth are seen here, and all the great blocks of porphyry which compose the building were brought from a distance and borne up a hill 300 feet high. The superstitious Indians believe that the subterranean rooms of these ruins are inhabited by the ghosts of their ancestors and they resist any attempt to explore them."

gave evidence of the public prosperity. Its frail tenements were supplanted by solid structures of stone and lime. Its population rapidly increased.

At the beginning of the sixteenth century, just before the arrival of the Spaniards, the Aztec dominion reached across the continent, from the Atlantic to the Pacific; and, under the bold and bloody Ahuitzotl, its arms had been carried far over the limits already noticed as defining its permanent territory into the farthest corners of Guatemala and Nicaragua. This extent of empire, however limited in comparison with that of many other States, is truly wonderful, considering it as the acquisition of a people whose whole population and resources had so recently been comprised within the walls of their own petty city; and considering, moreover, that the conquered territory was thickly settled by various races, bred to arms like the Mexicans, and little inferior to them in social organization.

THE LAWS OF THE AZTECS

The laws of the Aztecs were registered and exhibited to the people in their hieroglyphical paintings. Much the larger part of them, as in every nation imperfectly civilized, relates rather to the security of persons than of property. The great crimes against society were all made capital. Even the murder of a slave was punished with death. Adulterers, as among the Jews, were stoned to death.

Thieving, according to the degree of the offense, was punished by slavery or death. Yet the Mexicans could have been under no great apprehension of this crime, since the entrances to their dwellings were not secured by bolts or fastenings of any kind. It was a capital offense to remove the boundaries of another's lands; to alter the established measures, and for a guardian not to be able to give a good account of his ward's property. These regulations evince a regard for equity in dealings and for private rights, which argues a considerable progress in civilization. Prodigals who squandered their patrimony were punished in like manner—a severe sentence, since the crime brought its adequate punishment along with it.

Intemperance, which was the burden, moreover, of their religious homilies, was visited with the severest penalties, as if they had foreseen in it the consuming canker of their own, as well as of the other Indian races in later times. It was punished in the young with death, and in older persons with loss of rank and confiscation of property. Yet a decent conviviality was not meant to be proscribed at their festivals, and they possessed the means of indulging it, in a mild fermented liquor called *pulque*, which is still popular not only with the Indian, but the European population of the country.

STRICT DIVORCE LAWS

The rites of marriage were celebrated with as much formality as in any Christian country, and the institution was held in such reverence that a tribunal was instituted for the sole purpose of determining questions relating to it. Divorces could not be obtained until authorized by a sentence of this court, after a patient hearing of the parties.

But the most remarkable part of the Aztec code was that relating to slavery. There were several descriptions of slaves: prisoners taken in war, who were almost always reserved for the dreadful doom of sacrifice; criminals, public debtors, persons who, from extreme poverty, voluntarily resigned their freedom, and children who were sold by their own parents. In the last instance, usually occasioned also by poverty, it was common for the parents, with the master's consent, to substitute others of their children successively as they grew up, thus distributing the burden as equally as possible among the different members of the family. The willingness of freedom to incur the penalties of this condition is explained by the mild form in which it existed. The contract of sale was executed in the presence of at least four witnesses. The services to be exacted were limited with great precision.

The slave was allowed to have his own family, to hold property, and even other slaves. His children were free. No one could be born to slavery in Mexico; an honorable distinction not known, I believe, in any civilized community where

ANOTHER VIEW OF THE XOCHICALCO RUINS: CUERNAVACA, MEXICO

Many of the neighboring hacienda houses were built of stone taken from these ruins. The carvings are of warriors, serpents, birds, animals, and plants. At the foot of the hill which these stones surmount are several caves, one known as the Grotto of the Sun.

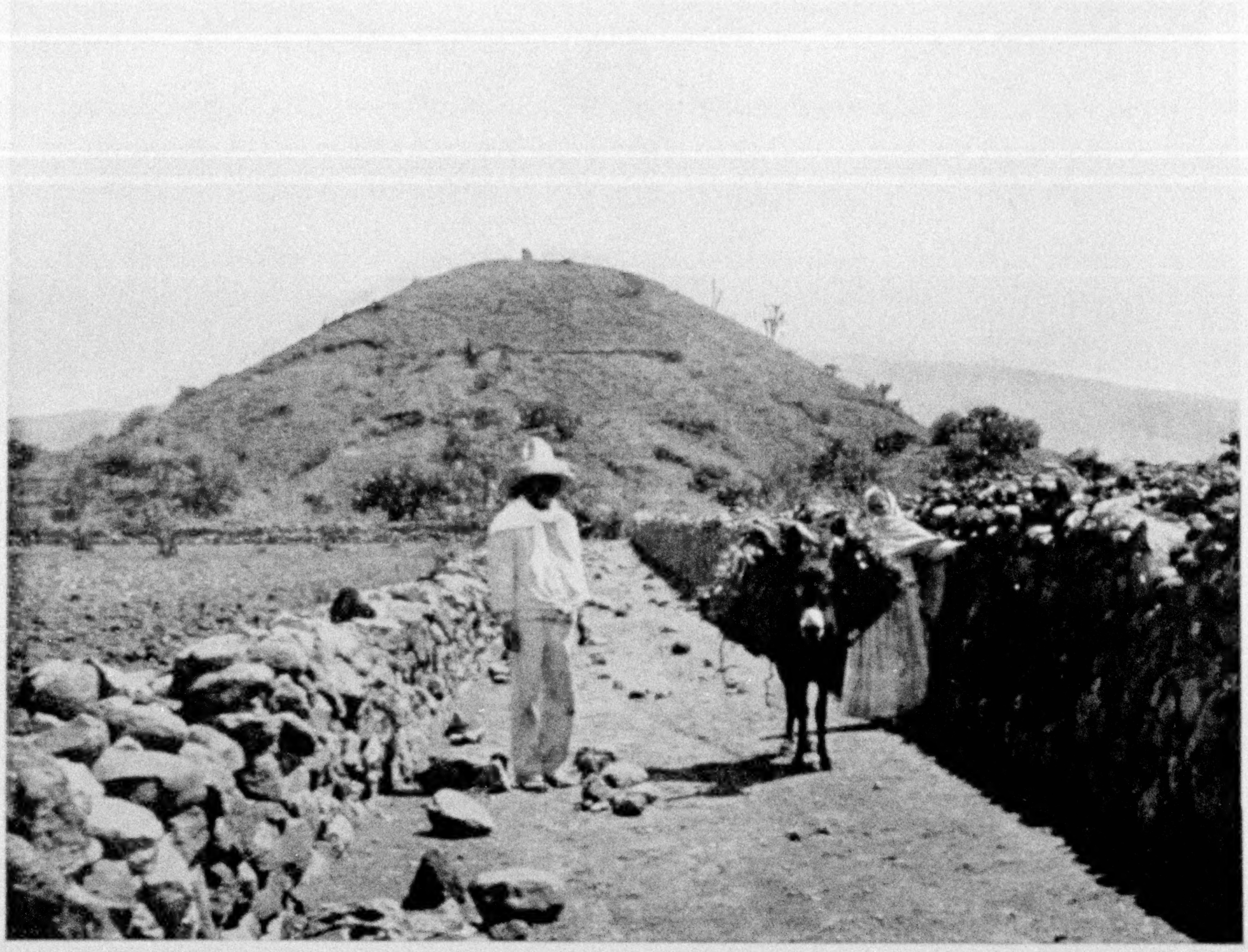
GIANT CYPRESS AT TULE, NEAR CITY OF OAXACA, MEXICO

This great tree, 154 feet high and its trunk so large that 28 men with outstretched arms can barely encircle it, is one of the largest in the world. Humboldt inscribed his name upon it, and, history says, Cortez rested his men under its branches while en route to Honduras.

slavery has been sanctioned. Slaves were not sold by their masters, unless when these were driven to it by poverty. They were often liberated by them at their death, and sometimes, as there was no natural repugnance founded on difference of blood and race, were married to them. Yet a refractory or vicious slave might be led into the market, with a collar round his neck, which intimated his bad character, and there be publicly sold, and, on a second sale, reserved for sacrifice.

Communication was maintained with the remotest parts of the country by means of couriers. Post-houses were es-

XUM



STREET OF THE DEAD: SAN JUAN TEOTIHUACAN, MEXICO

The sacred pyramids of San Juan Teotihuacan, situated 27 miles northeast of Mexico City, are reputed to be the largest artificial mounds in the New World. It is believed that they were built at least 900 years before Columbus discovered America.

tablished on the great roads, about two leagues distant from each other. The courier, bearing his dispatches in the form of a hieroglyphical painting, ran with them to the first station, where they were taken by another messenger and carried forward to the next, and so on till they reached the capital. These couriers, trained from childhood, traveled with incredible swiftness; not four or five leagues an hour, as an old chronicler would make us believe, but with such speed that despatches were carried from 100 to 200 miles a day.

Fresh fish was frequently served at Montezuma's table in 24 hours from the time it had been taken in the Gulf of Mexico, 200 miles from the capital. In this way intelligence of the movements of the royal armies was rapidly brought to court; and the dress of the courier, denoting by its color that of his tidings, spreading joy or consternation in the towns through which he passed.

But the great aim of the Aztec institutions, to which private discipline and public honors were alike directed, was the profession of arms. In Mexico, as in Egypt, the soldier shared with the priest the highest consideration. The king, as we have seen, must be an experienced warrior. The tutelary deity of the Aztecs was the god of war. A great object of their military expeditions was to gather hecatombs of captives for his altars. The soldier who fell in battle was transported at once to the region of ineffable bliss in the bright mansions of the Sun.

THE AZTEC COUNTERPART OF CHRISTIAN CRUSADERS

Every war, therefore, became a crusade; and the warrior, animated by a religious enthusiasm, like that of the early Saracen, or the Christian crusader, was not only raised to contempt of danger, but courted it, for the imperishable crown of martyrdom. Thus we find the same

PULQUE GATHERERS NEAR TOLUCA, MEXICO

Toluca is nearly a thousand feet higher than Mexico City, which, in its turn, is a mile and a half higher than Washington or New York. It is too high for dogs, cats, and insects, which are scarcer here than in almost any other city in the country.

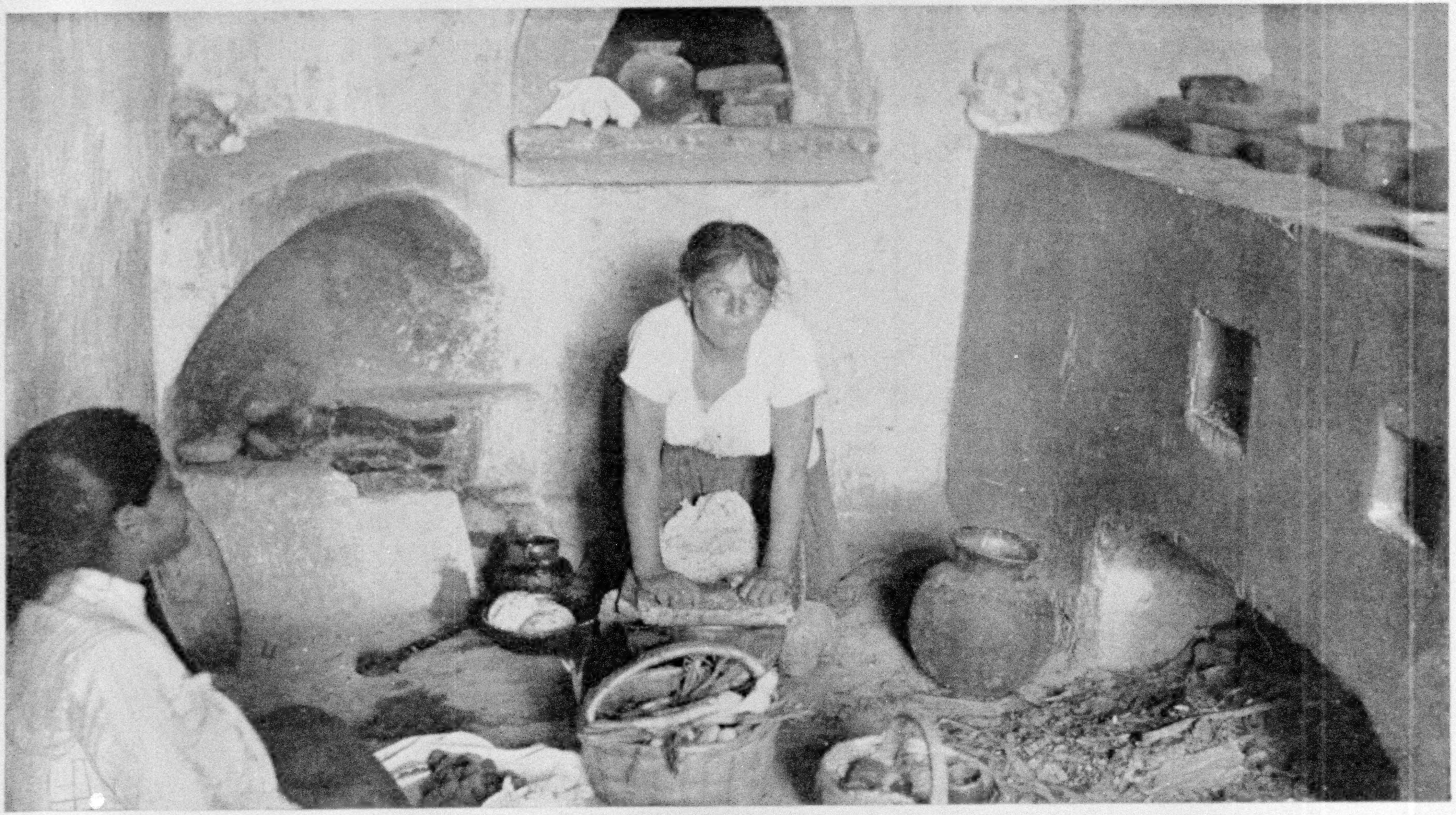
impulse acting in the most opposite quarters of the globe, and the Asiatic, the European, and the American, each earnestly invoking the holy name of religion in the perpetration of human butchery.

The dress of the higher warriors was picturesque and often magnificent. Their bodies were covered with a close vest of quilted cotton, so thick as to be impenetrable to the light missiles of Indian warfare. This garment was so light and serviceable that it was adopted by the Spaniards. The wealthier chiefs sometimes wore, instead of this cotton mail, a cuirass made of thin plates of gold or silver. Over it was thrown a surcoat of the gorgeous feather-work in which they excelled. Their helmets were sometimes of wood, fashioned like the heads of wild animals, and sometimes of silver, on the top of which waved a *panache* of variegated plumes, sprinkled with precious stones and ornaments of gold. They also wore collars, bracelets, and ear-rings of the same rich material.

The national standard, which has been compared to the ancient Roman, displayed, in its embroidery of gold and feather-work, the armorial ensigns of the state. These were significant of its name, which, as the names of both persons and places were borrowed from some material object, was easily expressed by hieroglyphical symbols. The companies and the great chiefs had also their appropriate banners and devices, and the gaudy hues of their many-colored plumes gave a dazzling splendor to the spectacle.

MARCHED SINGING INTO BATTLE

Their tactics were such as belong to a nation with whom war, though a trade, is not elevated to the rank of a science. They advanced singing and shouting their war-cries, briskly charging the enemy, as rapidly retreating, and making use of am-



AN INDIAN KITCHEN IN HIGHLAND MEXICO

The kind of housekeeping whose story this picture tells is responsible in part for the high death rate in Mexico. If our sanitary conditions and our doctors were no better than those of Mexico, we would have a million deaths a year more than we have now, and not based upon the fortunes of war either.

buscades, sudden surprises, and the light skirmish of guerilla warfare. Yet their discipline was such as to draw forth the encomiums of the Spanish Conquerors. "A beautiful sight it was," says one of them, "to see them set out on their march, all moving forward so gayly and in so admirable order!" In battle they did not seek to kill their enemies so much as to take them prisoners, and they never scalped, like other North American tribes. The valor of a warrior was estimated by the number of his prisoners, and no ransom was large enough to save the devoted captive.

Their military code bore the same stern features as their other laws. Disobedience of orders was punished with death. It was death also for a soldier to leave his colors, to attack the enemy before the signal was given, or to plunder another's booty or prisoners. One of the last Tezcucan princes, in the spirit of an ancient Roman, put two sons to death, after having cured their wounds, for violating the last-mentioned law.

THEIR "HOUSES OF GOD"

The Mexican temples—*teocallis,* "houses of God," as they were called—were very numerous. They were solid masses of earth, cased with brick or stone, and in their form somewhat resemble the pyramidal structures of ancient Egypt. The bases of many of them were more than a hundred feet square, and they towered to a still greater height. They were distributed into four or five stories, each of smaller dimensions than that below. The ascent was by a flight of steps, at an angle of the pyramid, on the outside. This led to a sort of terrace, or gallery, at the base of the second story, which passed quite round the building to another flight of stairs, commencing also at the same angle as the preceding and directly over it, and leading to a similar terrace; so that one had to make the circuit of the temple several times before reaching the summit. In some instances the stairway led directly up the center of the western face of the building.

The top was a broad area, on which were erected one or two towers, 40 or 50 feet high, the sanctuaries in which stood the sacred images of the presiding deities. Before these towers stood the dreadful stone of sacrifice and two lofty altars, on which fires were kept, as inextinguishable as those in the Temple of Vesta. There were said to be 600 of these altars on smaller buildings within the inclosure of the great temple of Mexico, which, with those in the sacred edifices in other parts of the city, shed a brilliant illumination over its streets through the darkest night.

CEREMONIALS OF PEACE

From the construction of their temples all religious services were public. The long processions of priests winding round their massive sides, as they rose higher and higher toward the summit, and the dismal rites of sacrifice performed there, were all visible from the remotest corners of the capital, impressing on the spectator's mind a superstitious veneration for the mysteries of his religion and for the dread ministers by whom they were interpreted.

This impression was kept in full force by their numerous festivals. Every month was consecrated to some protecting deity; and every week—nay, almost every day—was set down in their calendar for some appropriate celebration; so that it is difficult to understand how the ordinary business of life could have been compatible with the exactions of religion. Many of their ceremonies were of a light and cheerful complexion, consisting of the national songs and dances, in which both sexes joined. Processions were made of women and children crowned with garlands and bearing offerings of fruits, the ripened maize, or the sweet incense of copal and other odoriferous gums, while the altars of the deity were stained with no blood save that of animals.

These were the peaceful rites derived from their Toltec predecessors, on which the fierce Aztecs engrafted a superstition too loathsome to be exhibited in all its nakedness, and one over which I would gladly draw a veil altogether, but that it would leave the reader in ignorance of their most striking institution, and one that had the greatest influence in forming the national character.

A MAGUEY PLANT IN BLOOM: MEXICO

A maguey plant in bloom is a sight one seldom sees in Mexico, for the reason that the stem is cut at its base and hollowed out, and the sap that would have gone into the flowers is collected and converted into that evil-smelling, criminal-making concoction called *pulque*. When the sap gathers—at the rate of ten to fifteen pints a day—peons pass from plant to plant, and with their mouths to one end of a tube suck it up, and then discharge it into containers made of pigskins, flung, saddle-bags fashion, across the back of an uncurried donkey. The liquid is then carried to the central station, where it is "ripened" in vats of untanned cowhide.

Human sacrifices were adopted by the Aztecs early in the fourteenth century, about 200 years before the Conquest. Rare at first, they became more frequent with the wider extent of their empire, till at length almost every festival was closed with this cruel abomination. These religious ceremonials were generally arranged in such a manner as to afford a type of the most prominent circumstances in the character or history of the deity who was the object of them. A single example will suffice.

PRISONERS IN THE RÔLES OF GODS

One of their most important festivals was that in honor of the god Tezcatlipoca, whose rank was inferior only to that of the Supreme Being. He was called "the soul of the world," and supposed to have been its creator. He was depicted as a handsome man, endowed with perpetual youth. A year before the intended sacrifice a captive, distinguished for his personal beauty, and without a blemish on his body, was selected to represent this deity. Certain tutors took charge of him and instructed him how to perform his new part with becoming grace and dignity. He was arrayed in a splendid dress, regaled with incense and with a profusion of sweet-scented flowers, of which the ancient Mexicans were as fond as their descendants at the present day.

When he went abroad he was attended by a train of the royal pages, and as he halted in the streets to play some favorite melody the crowd prostrated themselves before him and did him homage as the representative of their good deity. In this way he led an easy, luxurious life, till within a month of his sacrifice. Four beautiful girls, bearing the names of the principal goddesses, were then selected to be his companions, and with them he continued to live in idle dalliance, feasted at the banquets of the principal nobles, who paid him all the honors of a divinity.

THE FATAL DAY OF SACRIFICE

At length the fatal day of sacrifice arrived. The term of his short-lived glories was at an end. He was stripped of his gaudy apparel and bade adieu to the fair partners of his revelries. One of the royal barges transported him across the lake to a temple which rose on its margin, about a league from the city. Hither the inhabitants of the capital flocked to witness the consummation of the ceremony. As the sad procession wound up the sides of the pyramid, the unhappy victim threw away his gay chaplets of flowers and broke in pieces the musical instruments with which he had solaced the hours of captivity.

On the summit he was received by six priests, whose long and matted locks flowed disorderly over their sable robes, covered with hieroglyphic scrolls of mystic import. They led him to the sacrificial stone, a huge block of jasper, with its upper surface somewhat convex. On this the prisoner was stretched.

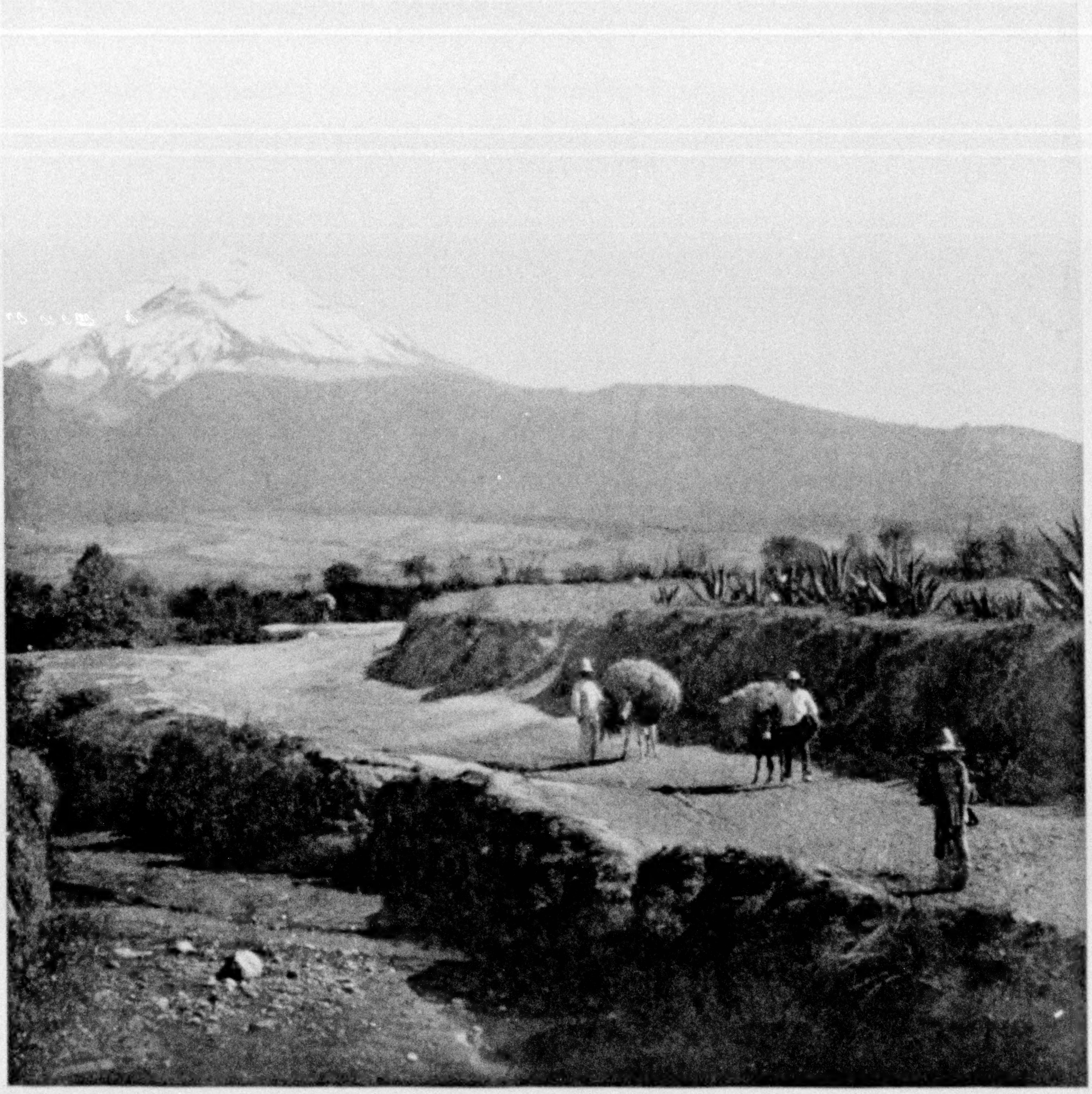
Five priests secured his head and his limbs, while the sixth, clad in a scarlet mantle, emblematic of his bloody office, dexterously opened the breast of the wretched victim with a sharp razor of *itzili* — a volcanic substance, hard as flint — and, inserting his hand in the wound, tore out the palpitating heart. The minister of death, first holding this up toward the sun—an object of worship throughout Anahuac—cast it at the feet of the deity to whom the temple was devoted, while the multitudes below prostrated themselves in humble adoration. The tragic story of this prisoner was expounded by the priests as the type of human destiny which, brilliant in its commencement, too often closes in sorrow and disaster.

WOMEN AND CHILDREN OFFERED UP

Such was the form of human sacrifice usually practised by the Aztecs. It was the same that often met the indignant eyes of the Europeans in their progress through the country, and from the dreadful doom of which they themselves were not exempted. There were, indeed, some occasions when preliminary tortures, of the most exquisite kind—with which it is unnecessary to shock the reader—were inflicted, but they always terminated with the bloody ceremony above described. It should be remarked, however, that such tortures were not the spontaneous sug-

HIGH-WATER OVEN ON THE TAMESI RIVER, NEAR TAMPICO, MEXICO

The oven is elevated to avoid flooding from the periodic overflows of the river. On the Atlantic slope of Mexico the rainfall is very heavy—from 8 to 12 feet a year—and it often comes in such a downpour as to threaten to wash everything away.

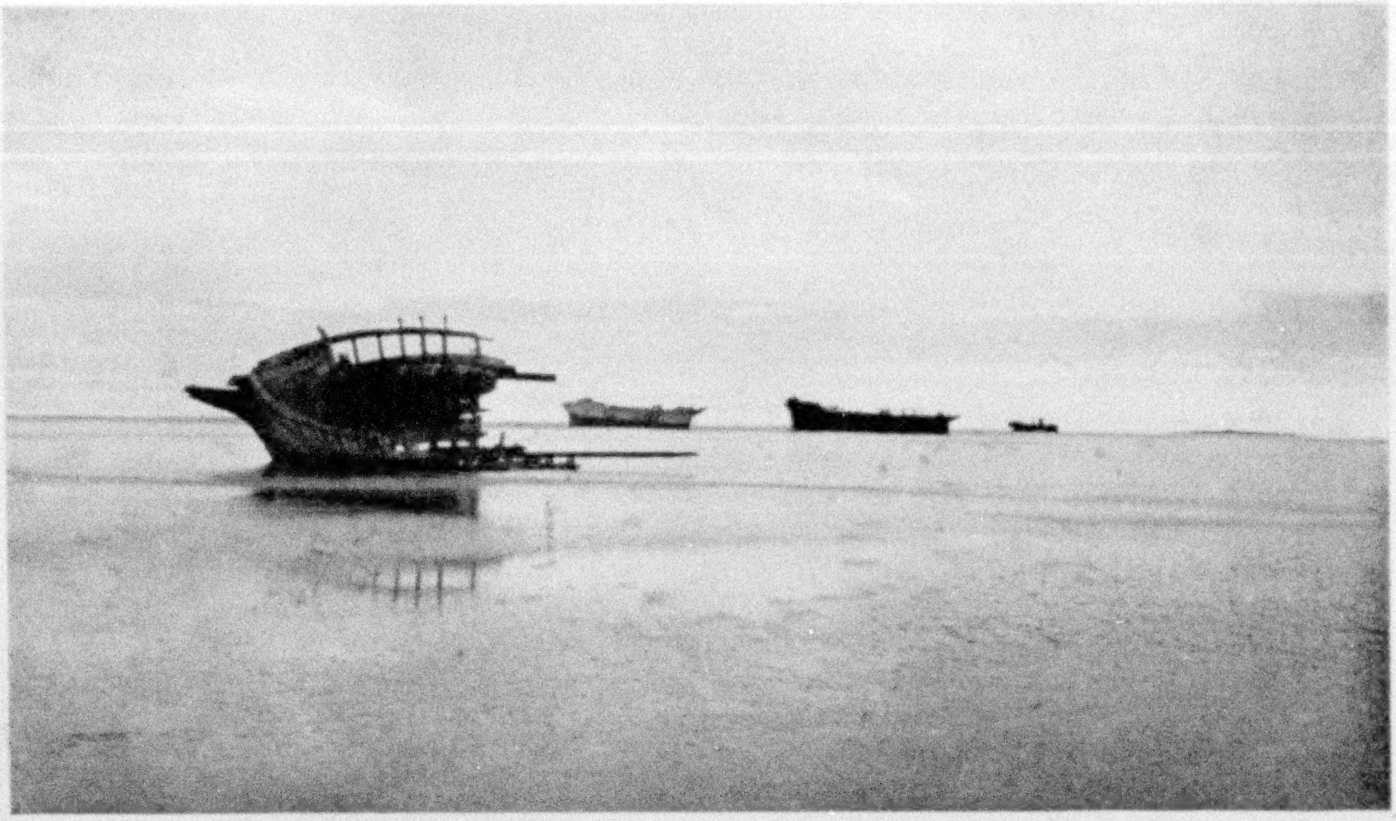


THE VOLCANO POPOCATEPETL, FROM THE VALLEY OF MEXICO

In the geography classes in school we are taught to pronounce the name of this beautiful mountain Popo-cat-epetl, putting the emphasis on "cat." The correct way is Popo-ca-tepetl. The Aztec Indians joined the modifying adjective to its noun with a preposition just as we join two nouns or two parts of a compound sentence with a conjunction. The "ca" in the word Popocatepetl is the conjunction which joins "popo," meaning smoking, to "tepetl," meaning hill.

gestions of cruelty, as with the North American Indians, but were all rigorously prescribed in the Aztec ritual, and doubtless were often inflicted with the same compunctious visitings which a devout familiar of the Holy Office might at times experience in executing its stern decrees.

Women as well as the other sex were sometimes reserved for sacrifice. On some occasions, particularly in seasons of drought, at the festival of the insatiable Tlaloc, the god of rain, children, for the most part infants, were offered up. As they were borne along in open litters, dressed in their festal robes and decked with the fresh blossoms of spring, they moved the hardest heart to pity, though their cries were drowned in the wild chant of the priests, who read in their tears a favorable augury for their petition. These innocent victims were generally bought by the priests of parents



WRECKS ON THE BEACH NEAR VERA CRUZ, MEXICO

And eloquent they are of a form of civilization that spends its energies on internecine war rather than upon the improvement of the lanes of the near-by sea

who were poor, but who stifled the voice of nature, probably less at the suggestions of poverty than of a wretched superstition.

CANNIBALS WITH REFINED TASTES

The most loathsome part of the story—the manner in which the body of the sacrificed captive was disposed of—remains yet to be told. It was delivered to the warrior who had taken him in battle, and by him, after being dressed, was served up in an entertainment to his friends. This was not the coarse repast of famished cannibals, but a banquet teeming with delicious beverages and delicate viands, prepared with art and attended by both sexes, who conducted themselves with all the decorum of civilized life. Surely never were refinement and the extreme of barbarism brought so closely in contact with each other!

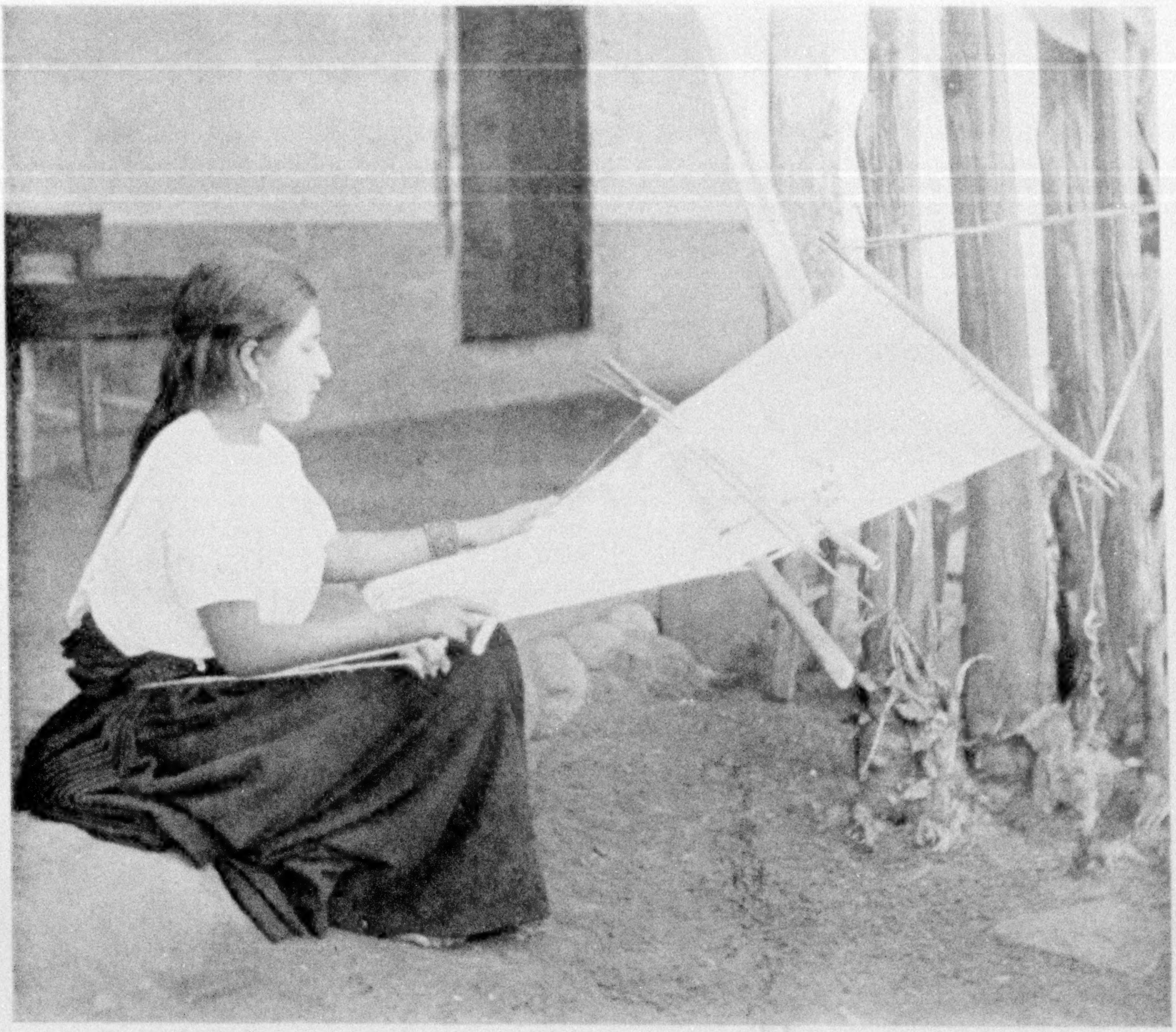
Human sacrifices have been practised by many nations, not excepting the most polished nations of antiquity, but never by any on a scale to be compared with those in Anahuac.

Agriculture in Mexico was in the same advanced state as the other arts of social life. In few countries, indeed, has it been more respected. It was closely interwoven with the civil and religious institutions of the nation. There were peculiar deities to preside over it; the names of the months and of the religious festivals had more or less reference to it.

Among the most important articles of husbandry we may notice the banana. Another celebrated plant was the cacao, the fruit of which furnished the chocolate—from the Mexican *chocolatl*—now so common a beverage throughout Europe. The vanilla, confined to a small district of the seacoast, was used for the same purposes, of flavoring their food and drink, as with us.

MEAL AND SUGAR FROM MAIZE

The great staple of the country, as, indeed, of the American continent, was maize, or Indian corn, which grew freely along the valleys and up the steep sides of the Cordilleras to the high level of the table-land. The Aztecs were as curious in its preparation and as well instructed in its manifold uses as the most expert New England housewife. Its gigantic stalks, in these equinoctial regions, af-



WEAVING A BLANKET IN INDIAN MEXICO

The hand-woven blankets made by the Indian girls, to whom a dime a day is a good wage, although they begin work at sunrise and labor until sunset, are the admiration and despair of all who appreciate fine handiwork or value perfect color combinations. A small blanket bought in Mexico City five years ago, although it has been used as a wall tapestry ever since, seems as bright in every one of its rainbow colors as on the day it was bought. The weaving is so perfect that it has no right or wrong side.

ford a saccharine matter not found to the same extent in northern latitudes, and supplied the natives with sugar little inferior to that of the cane itself, which was not introduced among them till after the Conquest.

THE MAGUEY'S VERSATILITY

But the miracle of nature was the great Mexican aloe, or *maguey*, whose clustering pyramids of flowers, towering above their dark coronals of leaves, were seen sprinkled over many a broad acre of the table-land. As we have already noticed, its bruised leaves afforded a paste from which paper was manufactured; its juice was fermented into an intoxicating beverage, *pulque*, of which the natives to this day are excessively fond; its leaves further supplied an impenetrable thatch for the more humble dwellings; thread, of which coarse stuffs were made, and strong cords, were drawn from its tough and twisted fibers; pins and needles were made of the thorns at the extremity of its leaves, and the root, when properly cooked, was converted into a palatable and nutritious food. The *agave*, in short, was meat, drink, clothing, and writing materials for the Aztec!

The Mexicans were as well acquainted with the mineral as with the vegetable

XUM

MOUNTAIN ROAD: SAN MIGUEL DE ALLENDE, MEXICO

Good roads in Mexico are about as rare as good men in a den of thieves, and this is one of the exceptions. Under the Diaz regime railroad building was the principal activity of the country. Since then its energies have been too absorbed with revolutions and counter-revolutions to leave any time for highway improvement.

treasures of their kingdom. Silver, lead, and tin they drew from the mines of Tasco; copper from the mountains of Zacotollan. These were taken not only from the crude masses on the surface, but from veins wrought in the solid rock, into which they opened extensive galleries. In fact, the traces of their labors furnished the best indications for the early Spanish miners. Gold, found on the surface or gleaned from the beds of rivers, was cast into bars or, in the form of dust, made part of the regular tribute of the southern provinces of the empire. The use of iron, with which the soil was impregnated, was unknown to them. Notwithstanding its abundance, it demands so many processes to prepare it for use that it has commonly been one of the last metals pressed into the service of man.

They found a substitute in an alloy of tin and copper, and with tools made of this bronze could cut not only metals, but, with the aid of a silicious dust, the hardest substances, as basalt, porphyry, amethysts, and emeralds. They fashioned these last, which were found very large, into many curious and fantastic forms. They cast, also, vessels of gold and silver, carving them with their metallic chisels in a very delicate manner. Some of the silver vases were so large that a man could not encircle them with his arms. They imitated very nicely the figures of animals, and, what was extraordinary, could mix the metals in such a manner that the feathers of a bird or the scales of a fish should be alternately of gold and silver. The Spanish goldsmiths admitted their superiority over themselves in these ingenious works.

SHAVING WITH STONE RAZORS

They employed another tool, made of *itztli*, or obsidian, a dark transparent mineral, exceedingly hard, found in abundance in their hills. They made it into knives, razors, and their serrated swords. It took a keen edge, though soon blunted. With this they wrought the various stones and alabasters employed in the construction of their public works and principal dwellings.

The most remarkable piece of sculpture yet disinterred is the great calendar-stone. It consists of dark porphyry, and in its original dimensions as taken from the quarry is computed to have weighed nearly fifty tons. It was transported from the mountains beyond Lake Chalco, a distance of many leagues, over a broken country intersected by water-courses and canals. In crossing a bridge which traversed one of these latter in the capital the supports gave way, and the huge mass was precipitated into the water, whence it was with difficulty recovered. The fact that so enormous a fragment of porphyry could be thus safely carried for leagues, in the face of such obstacles and without the aid of cattle—for the Aztecs, as already mentioned, had no animals of draught—suggests to us no mean ideas of their mechanical skill and of their machinery, and implies a degree of cultivation little inferior to that demanded for the geometrical and astronomical science displayed in the inscriptions on this very stone.

WONDERFUL DYES

The ancient Mexicans made utensils of earthenware for the ordinary purposes of domestic life, numerous specimens of which still exist. They made cups and vases of a lackered or painted wood, impervious to wet and gaudily colored. Their dyes were obtained from both mineral and vegetable substances. Among them was the rich crimson of the cochineal, the modern rival of the famed Tyrian purple. It was introduced into Europe from Mexico, where the curious little insect was nourished with great care on plantations of cactus, since fallen into neglect. The natives were thus enabled to give a brilliant coloring to the webs, which were manufactured of every degree of fineness from the cotton raised in abundance throughout the warmer regions of the country. They had the art, also, of interweaving with these the delicate hair of rabbits and other animals, which made a cloth of great warmth as well as beauty of a kind altogether original, and on this they often laid a rich embroidery of birds, flowers, or some other fanciful device.

But the art in which they most delighted was their *plumaje*, or feather-

COCK FIGHT: RANCH NEAR LEON, MEXICO

It is a customary sight to walk along the streets of a rural Mexican town and see game cocks tethered at every front door or to see a train stop at a station with fighting roosters perched in most of the windows of the peon coaches, each one held by his owner

FIGHTING COCKS: QUERÉTARO, MEXICO

The peon with Spanish blood in his veins is nearly always fond of the sight of gore. At a Mexican cockpit the betting is faster and more furious than the fun at a three-ring circus, and the enthusiasm is about as great when the steel-spurred cocks cut one another to pieces as when a mad bull gores a horse to death in the bull-ring. Moral sense, after all, it would seem, is largely a question of geography.

work. With this they could produce all the effect of a beautiful mosaic. The gorgeous plumage of the tropical birds, especially of the parrot tribe, afforded every variety of color; and the fine down of the humming-bird, which reveled in swarms among the honeysuckle bowers of Mexico, supplied them with soft aërial tints that gave an exquisite finish to the picture. The feathers, pasted on a fine cotton web, were wrought into dresses for the wealthy, hangings for apartments, and ornaments for the temples. No one of the American fabrics excited such admiration in Europe, whither numerous specimens were sent by the Conquerors.

The ancient city of Mexico covered the same spot occupied by the modern capital. The great causeways touched it in the same points; the streets ran in much the same direction, nearly from north to south and from east to west; the cathedral in the *plaza mayor* stands on the same ground that was covered by the temple of the Aztec war-god, and the four principal quarters of the town are

Photograph by John H. Hall

A PUBLIC SCRIBE: MEXICO

For four centuries the Spaniards and their descendants have ruled Mexico, but the ratio of illiteracy to literacy is little changed since Cortez brought the Indians under the yoke of Castile and Aragon.

still known among the Indians by their ancient names.

Yet an Aztec of the days of Montezuma, could he behold the modern metropolis, which has risen with such phœnix-like splendor from the ashes of the old, would not recognize its site as that of his own Tenochtitlan; for the latter was encompassed by the salt floods of Tezcuco, which flowed in ample canals through every part of the city, while the Mexico of our day stands high and dry on the main land, nearly a league distant at its center from the water. The cause of this apparent change in its position is the diminution of the lake, which, from the rapidity of evaporation in these elevated regions, had become perceptible before the Conquest, but which has since been greatly accelerated by artificial causes.

THE CITY IMMACULATE

A careful police provided for the health and cleanliness of the city. A numerous retinue are said to have been daily employed in watering and sweeping the streets, so that a man—to borrow the language of an old Spaniard—"could walk through them with as little danger of soiling his feet as his hands." The water, in a city washed on all sides by the salt floods, was extremely brackish. A liberal supply of the pure element, however, was brought from Chapultepec, "the grasshopper's hill," less than a league distant. It was brought through an earthen pipe, along a dike constructed for the purpose. That there might be no failure in so essential an article when repairs were going on, a double course of pipes was laid. In this way a column of water of the size of a man's body was conducted into the heart of the capital, where it fed the fountains and reservoirs of the principal mansions. Openings were made in the aqueduct as it crossed the bridges, and thus a supply was furnished to the canoes below, by means of which it was transported to all parts of the city.

While Montezuma encouraged a taste

for architectural magnificence in his nobles, he contributed his own share toward the embellishment of the city. It was in his reign that the famous calendar-stone, weighing, probably, in its primitive state, nearly fifty tons, was transported from its native quarry, many leagues distant, to the capital, where it still forms one of the most curious monuments of Aztec science. Indeed, when we reflect on the difficulty of hewing such a stupendous mass from its hard basaltic bed without the aid of iron tools, and that of transporting it such a distance across land and water without the help of animals, we may well feel admiration at the mechanical ingenuity and enterprise of the people who accomplished it.

MONTEZUMA'S MAGNIFICENT MANSION

Not content with the spacious residence of his father, Montezuma erected another on a yet more magnificent scale. This building, or, as it might more correctly be styled, pile of buildings, spread over an extent of ground so vast that, as one of the Conquerors assures us, its terraced roof might have afforded ample room for thirty knights to run their courses in a regular tourney. Remarkable were its interior decorations, its fanciful draperies, its roofs inlaid with cedar and other odoriferous woods, held together without a nail and, probably, without a knowledge of the arch, its numerous and spacious apartments, which Cortés, with enthusiastic hyperbole, does not hesitate to declare superior to anything of the kind in Spain.

Adjoining the principal edifice were others devoted to various objects. One was an armory, filled with the weapons and military dresses worn by the Aztecs, all kept in the most perfect order, ready for instant use. The emperor was himself very expert in the management of the *maquahuitl,* or Indian sword, and took great delight in witnessing athletic exercises and the mimic representation of war by his young nobility. Another building was used as a granary, and others as warehouses for the different articles of food and apparel contributed by the districts charged with the maintenance of the royal household.

There were also edifices appropriated to objects of quite another kind. One of these was an immense aviary, in which birds of splendid plumage were assembled from all parts of the empire. Here was the scarlet cardinal, the golden pheasant, the endless parrot tribe, with their rainbow hues (the royal green predominant), and that miniature miracle of nature, the humming-bird, which delights to revel among the honeysuckle bowers of Mexico. Three hundred attendants had charge of this aviary, who made themselves acquainted with the appropriate food of its inmates, oftentimes procured at great cost, and in the moulting season were careful to collect the beautiful plumage, which, with its many-colored tints, furnished the materials for the Aztec painter.

A separate building was reserved for the fierce birds of prey; the voracious vulture tribes and eagles of enormous size, whose home was in the snowy solitudes of the Andes. No less than five hundred turkeys, the cheapest meat in Mexico, were allowed for the daily consumption of these tyrants of the feathered race.

THE AZTEC ZOO DESCRIBED

Adjoining this aviary was a menagerie of wild animals, gathered from the mountain forests, and even from the remote swamps of the *tierra caliente.*

The collection was still further swelled by a great number of reptiles and serpents remarkable for their size and venomous qualities, among which the Spaniards beheld the fiery little animal "with the castanets in his tail," the terror of the American wilderness. The serpents were confined in long cages lined with down or feathers or in troughs of mud and water.

The beasts and birds of prey were provided with apartments large enough to allow of their moving about, and secured by a strong lattice-work, through which light and air were freely admitted. The whole was placed under the charge of numerous keepers, who acquainted themselves with the habits of their prisoners and provided for their comfort and cleanliness.

POPOCATEPETL FROM THE SUMMIT OF THE IXTACCIHUATL

This graceful extinct volcano rises more than three miles above the level of the sea. According to Indian traditions, it came into being after a violent earthquake following terrific subterranean noises. It has been quiescent since 1802. Statisticians estimate that 100,000,000 pounds of sulphur have been removed from it since the Conquest.

With what deep interest would the enlightened naturalist of that day—an Oviedo, or a Martyr, for example—have surveyed this magnificent collection, in which the various tribes which roamed over the Western wilderness, the unknown races of an unknown world, were brought into one view! How would they have delighted to study the peculiarities of these new species, compared with those of their own hemisphere, and thus have risen to some comprehension of the general laws by which Nature acts in all her works! The rude followers of Cortés did not trouble themselves with such refined speculations. They gazed on the spectacle with a vague curiosity not unmixed with awe, and as they listened to the wild cries of the ferocious animals and the hissings of the serpents they almost fancied themselves in the infernal regions.

A ROYAL MUSEUM OF HUMAN FREAKS

I must not omit to notice a strange collection of human monsters, dwarfs, and other unfortunate persons, in whose organization Nature had capriciously deviated from her regular laws. Such hideous anomalies were regarded by the Aztecs as a suitable appendage of state. It is even said they were in some cases the result of artificial means, employed by unnatural parents desirous to secure a provision for their offspring by thus qualifying them for a place in the royal museum!

Extensive gardens were spread out around these buildings, filled with fragrant shrubs and flowers, and especially with medicinal plants. No country has afforded more numerous species of these last than New Spain, and their virtues were perfectly understood by the Aztecs, with whom medical botany may be said to have been studied as a science. Amidst this labyrinth of sweet-scented groves and shrubberies fountains of pure water might be seen throwing up their sparkling jets and scattering refreshing dews over the blossoms. Ten large tanks, well stocked with fish, afforded a retreat on their margins to various tribes of water-fowl, whose habits were so carefully consulted that some of these ponds were of salt water, as that which they most loved to frequent. A tessellated pavement of marble inclosed the ample basins which were overhung by light and fanciful pavilions, that admitted the perfumed breezes of the gardens and offered a grateful shelter to the monarch in the sultry heats of summer.

FASHIONS IN ANCIENT AZTEC-LAND

The Spaniards were struck, on entering the capital, with the appearance of the inhabitants and their great superiority in the style and quality of their dress over the people of the lower countries. The *tilmatli* or cloak thrown over the shoulders and tied round the neck, made of cotton of different degrees of fineness, according to the condition of the wearer, and the ample sash around the loins, were often wrought in rich and elegant figures and edged with a deep fringe or tassel. As the weather was now growing cool, mantles of fur or of the gorgeous feather-work were sometimes substituted. The latter combined the advantage of great warmth with beauty. The Mexicans had also the art of spinning a fine thread of the hair of the rabbit and other animals, which they wove into a delicate web that took a permanent dye.

The women, as in other parts of the country, seemed to go about as freely as the men. They wore several skirts or petticoats of different lengths, with highly ornamented borders, and sometimes over them loose flowing robes, which reached to the ankles. These, also, were made of cotton, for the wealthier classes, of a fine texture, prettily embroidered. The Aztec women had their faces exposed, and their dark, raven tresses floated luxuriantly over their shoulders, revealing features which, although of a dusky or rather cinnamon hue, were not unfrequently pleasing.

A REMARKABLE MARKET-PLACE

On drawing near to the *tianguez*, or great market, the Spaniards were astonished at the throng of people pressing toward it, and, on entering the place, their surprise was still further heightened by the sight of the multitudes assembled there and the dimensions of the

inclosure, thrice as large as the celebrated square of Salamanca. Here were met together traders from all parts, with the products and manufactures peculiar to their countries—the goldsmiths of Azcapozalco, the potters and jewelers of Cholula, the painters of Tezcuco, the stonecutters of Tenajocan, the hunters of Xilotepec, the fishermen of Cuitlahuac, the fruiterers of the warm countries, the mat and chair makers of Quauhtitlan, and the florists of Xochimilco—all busily engaged in recommending their respective wares and in chaffering with purchasers.

IN THE TOY SHOP

The market-place was surrounded by deep porticos, and the several articles had each its own quarter allotted to it. Here might be seen cotton piled up in bales, or manufactured into dresses and articles of domestic use, as tapestry, curtains, coverlets, and the like. The richly stained and nice fabrics reminded Cortés of the *alcaycería*, or silk-market of Granada. There was the quarter assigned to the goldsmiths, where the purchaser might find various articles of ornament or use formed of the precious metals, or curious toys, made in imitation of birds and fishes, with scales and feathers alternately of gold and silver and with movable heads and bodies. These fantastic little trinkets were often garnished with precious stones, and showed a patient, puerile ingenuity in the manufacture, like that of the Chinese.

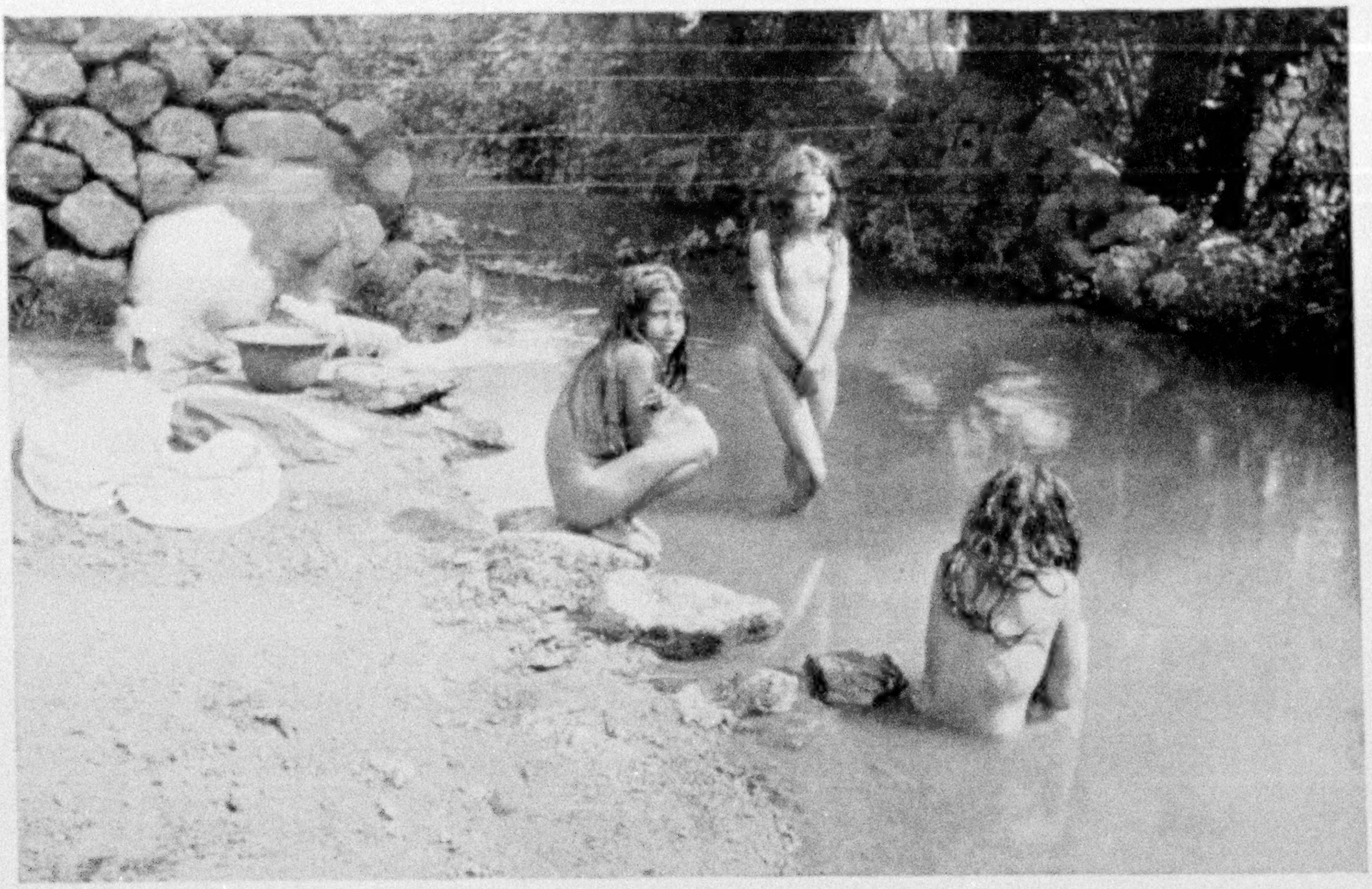
In an adjoining quarter were collected specimens of pottery, coarse and fine, vases of wood elaborately carved, varnished, or gilt, of curious and sometimes graceful forms. There were also hatchets made of copper alloyed with tin, the substitute, and, as it proved, not a bad one for iron. The soldier found here all the implements of his trade. The casque fashioned into the head of some wild animal, with its grinning defenses of teeth and bristling crest dyed with the rich tint of the cochineal; the *escaupil*, or quilted doublet of cotton, the rich surcoat of feather-mail, and weapons of all sorts, copper-headed lances and arrows, and the broad *maquahuitl*, the Mexican sword, with its sharp blades of *itztli*. Here were razors and mirrors of this same hard and polished mineral which served so many of the purposes of steel with the Aztecs.

In the square were also to be found booths occupied by barbers, who used these same razors in their vocation; for the Mexicans, contrary to the popular and erroneous notions respecting the Aborigines of the New World, had beards, though scanty ones. Other shops or booths were tenanted by apothecaries, well provided with drugs, roots, and different medicinal preparations. In other places, again, blank books or maps for the hieroglyphical picture-writing were to be seen, folded together like fans and made of cotton, skins, or more commonly the fibers of the agave, the Aztec papyrus.

Under some of the porticos they saw hides, raw and dressed, and various articles for domestic or personal use made of the leather. Animals, both wild and tame, were offered for sale, and near them, perhaps, a gang of slaves, with collars round their necks, intimating they were likewise on sale—a spectacle, unhappily, not confined to the barbarian markets of Mexico, though the evils of their condition were aggravated there by the consciousness that a life of degradation might be consummated at any moment by the dreadful doom of sacrifice.

SAVORY DISHES READY TO SERVE

The heavier materials for building, as stone, lime, timber, were considered too bulky to be allowed a place in the square, and were deposited in the adjacent streets on the borders of the canals. It would be tedious to enumerate all the various articles, whether for luxury or daily use, which were collected from all quarters in this vast bazaar. I must not omit to mention, however, the display of provisions, one of the most attractive features of the *tianguez;* meats of all kinds, domestic poultry, game from the neighboring mountains, fish from the lakes and streams, fruits in all the delicious abundance of these temperate regions, green vegetables, and the unfailing maize. There was many a viand, too, ready dressed, which sent up its savory steams,



A NATURE'S BATH-TUB AT CUERNAVACA, MEXICO

There are probably fewer bath-tubs in all tropical America than there are in the single city of New York. "The old swimming-hole" must answer for many millions of Mexicans; and in Mexico swimming-holes are often many miles apart.

provoking the appetite of the idle passenger; pastry, bread of the Indian corn, cakes, and confectionery. Along with these were to be seen cooling or stimulating beverages, the spicy foaming *chocolatl,* with its delicate aroma of vanilla, and the inebriating *pulque,* the fermented juice of the aloe. All these commodities, and every stall and portico, were set out, or rather smothered, with flowers, showing, on a much greater scale, indeed, a taste similar to that displayed in the markets of modern Mexico.

The most perfect order reigned throughout this vast assembly.

The women partook equally with the men of social festivities and entertainments. These were often conducted on a large scale, both as regards the number of guests and the costliness of the preparations. Numerous attendants, of both sexes, waited at the banquet. The halls were scented with perfumes and the courts strewed with odoriferous herbs and flowers, which were distributed in profusion among the guests as they arrived. Cotton napkins and ewers of water were placed before them as they took their seats at the board; for the venerable ceremony of ablution, before and after eating, was punctiliously observed by the Aztecs.

SNUFF USED IN TENOCHTITLAN

Tobacco was then offered to the company, in pipes, mixed up with aromatic substances, or in the form of cigars, inserted in tubes of tortoise shell or silver. They compressed the nostrils with the fingers while they inhaled the smoke, which they frequently s w a l l o w e d. Whether the women, who sat apart from the men at table, were allowed the indulgence of the fragrant weed, as in the most polished circles of modern Mexico, is not told us. It is a curious fact that the Aztecs also took the dried leaf in the pulverized form of snuff.

The table was well provided with substantial meats, especially game, among which the most conspicuous was the turkey, erroneously supposed, as its name imports, to have come originally from the East. These more solid dishes were

flanked by others of vegetables and fruits, of every delicious variety found on the North American continent. The different viands were prepared in various ways, with delicate sauces and seasoning, of which the Mexicans were very fond. Their palate was still further regaled by confections and pastry, for which their maize flour and sugar supplied ample materials.

The meats were kept warm by chafing-dishes. The table was ornamented with vases of silver, and sometimes gold, of delicate workmanship. The drinking cups and spoons were of the same costly materials, and likewise of tortoise shell. The favorite beverage was the *chocolatl,* flavored with vanilla and different spices. They had a way of preparing the froth of it so as to make it almost solid enough to be eaten and took it cold. The fermented juice of the maguey, with a mixture of sweets and acids, supplied also various agreeable drinks, of different degrees of strength, and formed the chief beverage of the elder part of the company.

CRITICISING THE HOST

As soon as they had finished their repast, the young people rose from the table, to close the festivities of the day with dancing. They danced gracefully to the sound of various instruments, accompanying their movements with chants of a pleasing, though somewhat plaintive, character. The older guests continued at table, sipping *pulque* and gossiping about other times, till the virtues of the exhilarating beverage put them in good humor with their own.

Intoxication was not rare in this part of the company, and, what is singular, was excused in them, though severely punished in the younger. The entertainment was concluded by a liberal distribution of rich dresses and ornaments among the guests, when they withdrew, after midnight, "some commending the feast and others condemning the bad taste or extravagance of their host; in the same manner," says an old Spanish writer, "as with us." Human nature is indeed much the same all the world over.

We shall be able to form a better idea of the actual refinement of the natives by penetrating into their domestic life. We have, fortunately, the means of doing so. We shall there find the ferocious Aztec frequently displaying all the sensibility of a cultivated nature, consoling his friends under affliction, or congratulating them on their good fortune, as on occasion of a marriage or of the birth or baptism of a child, when he was punctilious in his visits, bringing presents of costly dresses and ornaments, or the more simple offering of flowers, equally indicative of his sympathy. The visits at these times, though regulated with all the precision of Oriental courtesy, were accompanied by expressions of the most cordial and affectionate regard.

In this remarkable picture of manners, which I have copied faithfully from the records of earliest date after the Conquest, we find no resemblance to the other races of North American Indians. Some resemblance we may trace to the general style of Asiatic pomp and luxury. But in Asia woman, far from being admitted to unreserved intercourse with the other sex, is too often jealously immured within the walls of the harem.

The Aztec character was perfectly original and unique. It was made up of incongruities apparently irreconcilable. It blended into one the marked peculiarities of different nations, not only of the same phase of civilization, but as far removed from each other as the extremes of barbarism and refinement. It may find a fitting parallel in their own wonderful climate, capable of producing, on a few square leagues of surface, the boundless variety of vegetable forms, which belong to the frozen regions of the North, the temperate zone of Europe, and the burning skies of Arabia and Hindostan!

THE TREASURE CHEST OF MERCURIAL MEXICO

By Frank H. Probert

"QUE ES?" How simple a question, and yet on its answer rested the future of the "treasure-house" of Mexico. "What is it?"

Eighty long years before the *Mayflower,* with its precious burden of 102 souls, hove to off Plymouth Rock; 23 years after the defeat of Montezuma and the Aztecs by Cortez and his cohorts, and early in the history of the dominance of Spain over Mexico, a weary peon rested by the roadside while journeying afoot from Zacatecas to Pachuca. His small camp-fire had died down and the ashes were being scattered by the winds, when he was attracted by bright shining globules of a white metal in the rock on which he had built his fire. "Que es?" was his question, and the fairy tale of Guanajuato was begun. This was in 1554 at La Luz. Rayas, a few years later, discovered the mine which still bears his name, and in 1557 the Rayas and Mellado workings led to the recognition of the Veta Madre, the mother lode of Guanajuato, which has yielded untold riches.

Baron von Humboldt, writing at the close of the eighteenth century, asserted that Guanajuato had yielded one-fifth of the total amount of silver then current in the world. Cecil Rhodes prophesied of Mexico that "from her hidden vaults, her subterranean treasure-houses, will come the gold, silver, copper, and precious stones that will build the empires of tomorrow and make future cities of this world veritable New Jerusalems." The actual mint and government records show a production of gold and silver from the Veta Madre in excess of one billion dollars. But we are traveling too fast; let us halt to get our bearings and locate this Eldorado on the map, then rest awhile and enjoy that which it has to offer.

The State of Guanajuato is in the south-central part of the Republic of Mexico. The estimated population is 1,100,000. It is the most important mercantile center in the country, the total trade being valued at $67,000,000 per annum. The leading industries are mining, agriculture, and cattle raising.

The city of Guanajuato, capital of the State, is picturesquely situated, nestling in a small basin, surrounded on all sides by the Sierra de Guanajuato (see picture, page 37). The Cañada de Marfil affords a pass to the city through the cordon of hills from the fertile valley lands of Silao, a station on the line of the Mexican Central Railroad, 14 miles to the west. The railroad grade from Silao rises rapidly, following the tortuous course of the Rio de Guanajuato to an elevation of 7,000 feet, where, poised high in the Cordilleran plateau, is this historic city of 40,000 people—during these days of unending revolt and brigandage a wasted shadow of its former greatness.

THE CROWD THAT MEETS THE TRAIN

A motley crowd greets the train—the halt and blind, old and young, somberly and gayly clad—a fascinating mixture of humanity. Licensed porters (cargadores) all but snatch the baggage from the bewildered visitor. Scantily clad in calico clothes, with sandaled or bare feet, they will carry anything from a hand-bag to a grand piano on their broad backs for a small fee; but it is well to arrange details before engaging their help. The lordly rancher, with clanking spurs, stiffly embraces his arriving guest, and, with a few pats on the back, the formality of greeting is over. Demure damsels, whose olive-skinned complexions, modestly, though immoderately, plastered with white chalk, make their black snappy eyes and raven hair the darker, gather around in awkward groups; shapeless señoras, wrapped in mournful *rebozos,* old before reaching middle age; seraped and sombreroed señors; what a number of types have come to witness this event of the day, the arrival of the train!

Leaving the walled inclosure of the railroad yards, one looks down on the apparently cramped and crowded city be-

Photograph by Frank H. Probert

THE SHAFT OF A MEXICAN MINE

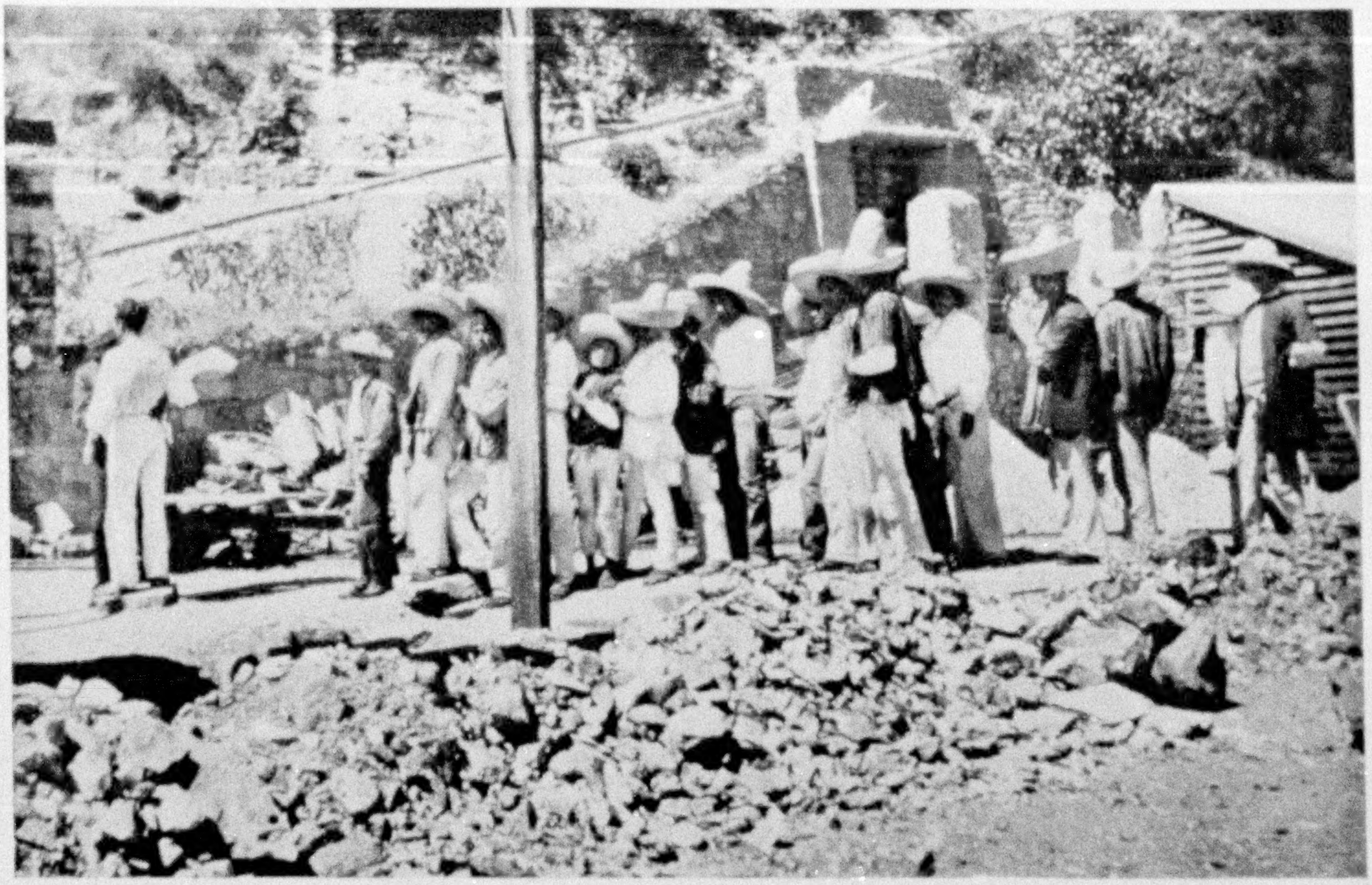
Labor is so cheap in Mexico that most of the silver mines use the "chicken-ladder" method of getting out their ore. The peons take heavy loads upon their heads and scale these rickety structures with an astonishing nimbleness.

low. Hard by, to the right, is the bull-ring, the scene on Sundays and fiestas of farcical combats between two-legged brutes and four-footed beasts.

In the soft sunshine of summer days the first vista of the city is striking indeed. Churches of magnificent proportions; ancient and modern architecture strangely blended in the same edifice; stately buildings; imposing markets; stores of all descriptions; and dwelling places, rudely bare, variously colored with neutral tints of calsomine, their grated windows and open doors exhibiting to all the sparsely furnished interior, where bird, beast, and human eat and live together. The sordid squalor of the many contrasts strikingly with the oppressive opulence of the few.

HORSEBACK RIDERS MUST TAKE THE SIDEWALK

The cobblestone streets are crooked and narrow; so narrow, in fact, that *caballeros* must take to the sidewalk to permit of the passing of any kind of vehicle. The dingy tram-cars are drawn or dragged by relays of mules, three abreast, beaten into subjection by the stinging lash or coaxed into action by the curses



Photograph by Frank H. Probert

EVERY LABORER IS SEARCHED BEFORE LEAVING THE PATIO OF THE MINES

The peon laborer in the mines has always received as wages only about the equivalent of "victuals and clothes"; and frijoles, tortillas, sombreros, shirts, trousers, and sandals, with a little mescal to wash down the food, represent about the sum total of food and raiment that the peon knows.

of the youthful drivers, whose vernacular is wonderfully expressive and effective; indeed, I doubt if anything but a mule can really appreciate the depth of feeling and irresistible persuasiveness of the vile expressions.

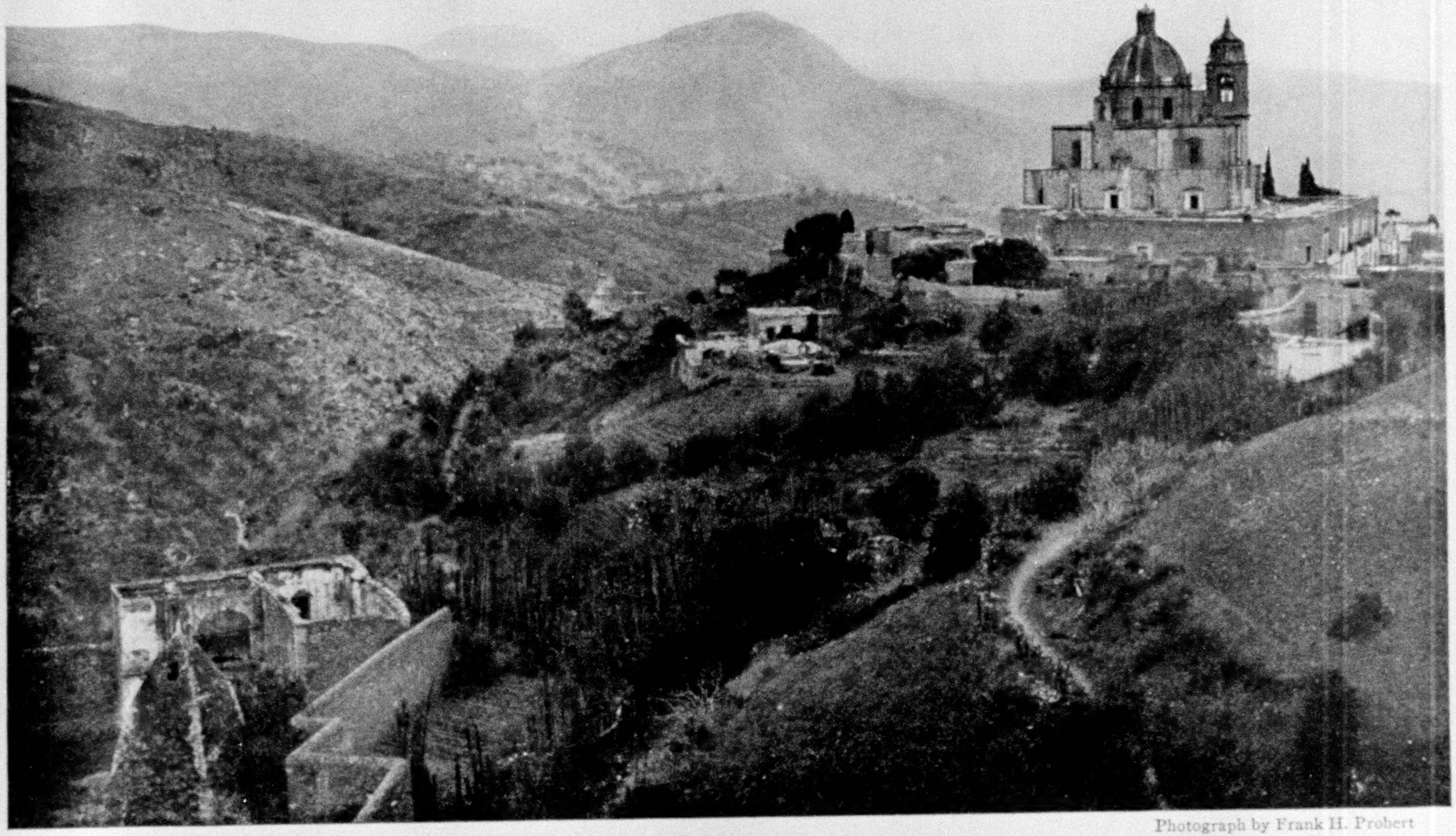
What strange sights one can see in these main arteries of the city! I have set my camera on the balcony of my room at the Woods Hotel and will snap what passes by. At first, a herd of patient plodding burros loaded down with slabs of the pale green sandstone, quarried near by and used for building purposes; a legless cripple shuffles along on a board, propelling himself with his hands; a cargador trots along tirelessly with his awkward burden, in this case a sewing-machine; more burros overloaded with charcoal; another pack struggles under the weight of sacked ore from the mines; still another bearing grain to the market, and the street-car demanding loudly a clear track; a funeral procession, where laughing children carry a baby's casket, swaying from side to side to the accompaniment of anything but appropriate music, and behind the mourners in silent solemnity.

Strangely superstitious are these simple people. Grossly ignorant, constant in their faith, pathetic in their simplicity, kindly and respectful, their life is epitomized in the verse:

"Let the World slide, let the World go;
A fig for care, and a fig for woe;
If I can't pay, why I can owe,
And death makes equal the high and low."

THE EASTER MORNING MEDLEY

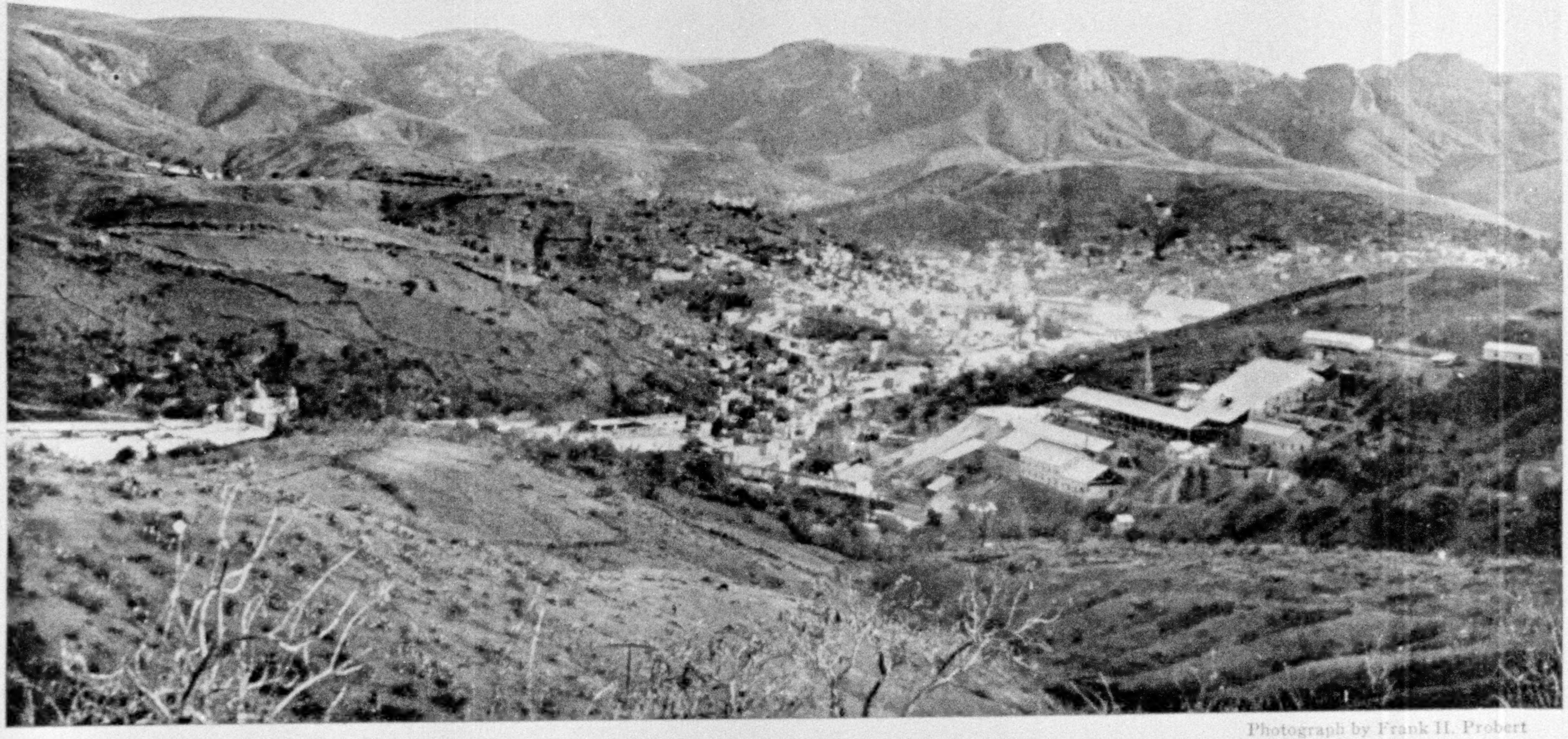
'Tis Easter Sunday morning. I am awakened at early dawn by the tooting of tin horns, accompanied by the sonorous screeches of bass viols and fiddles as sounds are sawn from their strings; by the shuffling of sandaled feet over the stones of the street, and by the babel of voices of passing peons. Church bells clang, sirens scream, whistles wildly mingle in the melody of merriment; for is not this the day when Judas Iscariot is to be hung in effigy!



Photograph by Frank H. Probert

THE CHURCH OF SAN CAYETANO: GUANAJUATO, MEXICO

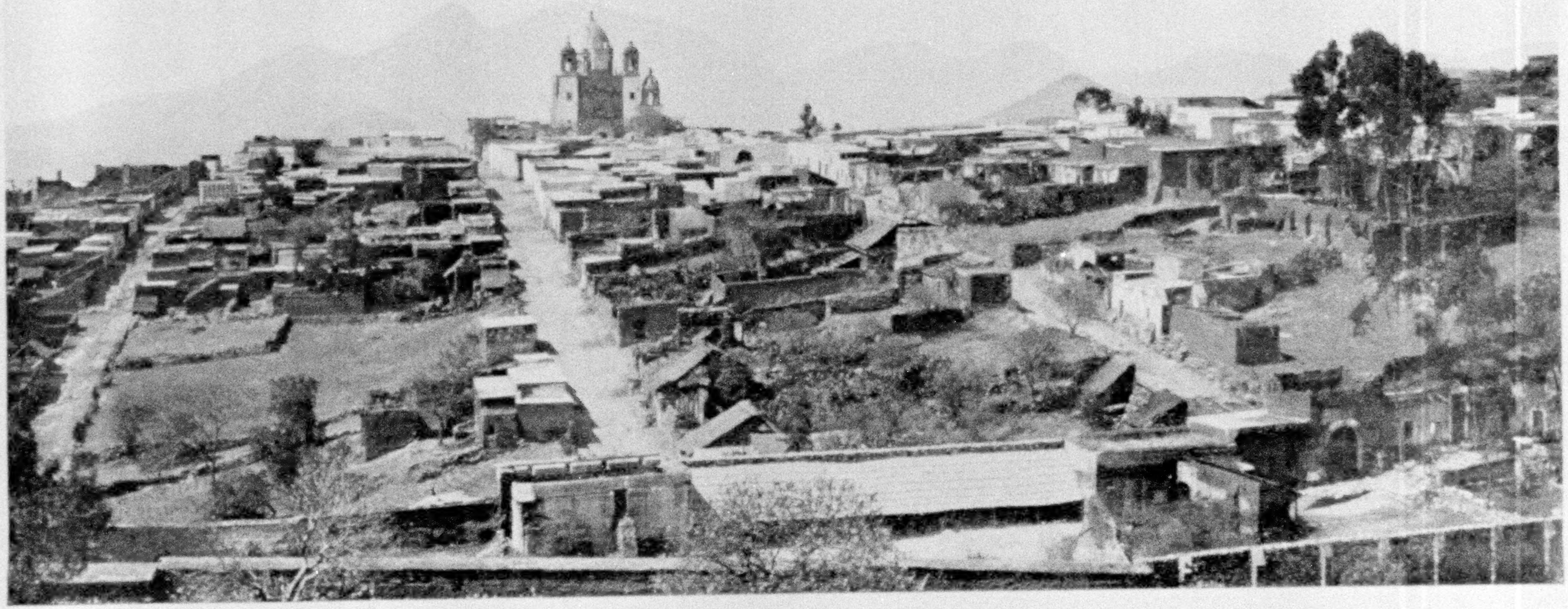
This is one of the most imposing churches of Mexico. It was built by the rich peon owner of the great Valenciana mine, which is said to have had an output worth nearly half a billion dollars. He intended to make a basilica rather than a chapel out of it, but the controversy between him and the local head of the church resulted in the lowering of its rank by having only one tower complete. It is said that after the church was built silver was found to exist under its foundations, and that he was offered fabulous sums if he would allow it to be torn down and rebuilt on another site, so that the ore deposits could be worked. In its palmy days its service cost $25,000 a year.



Photograph by Frank H. Probert

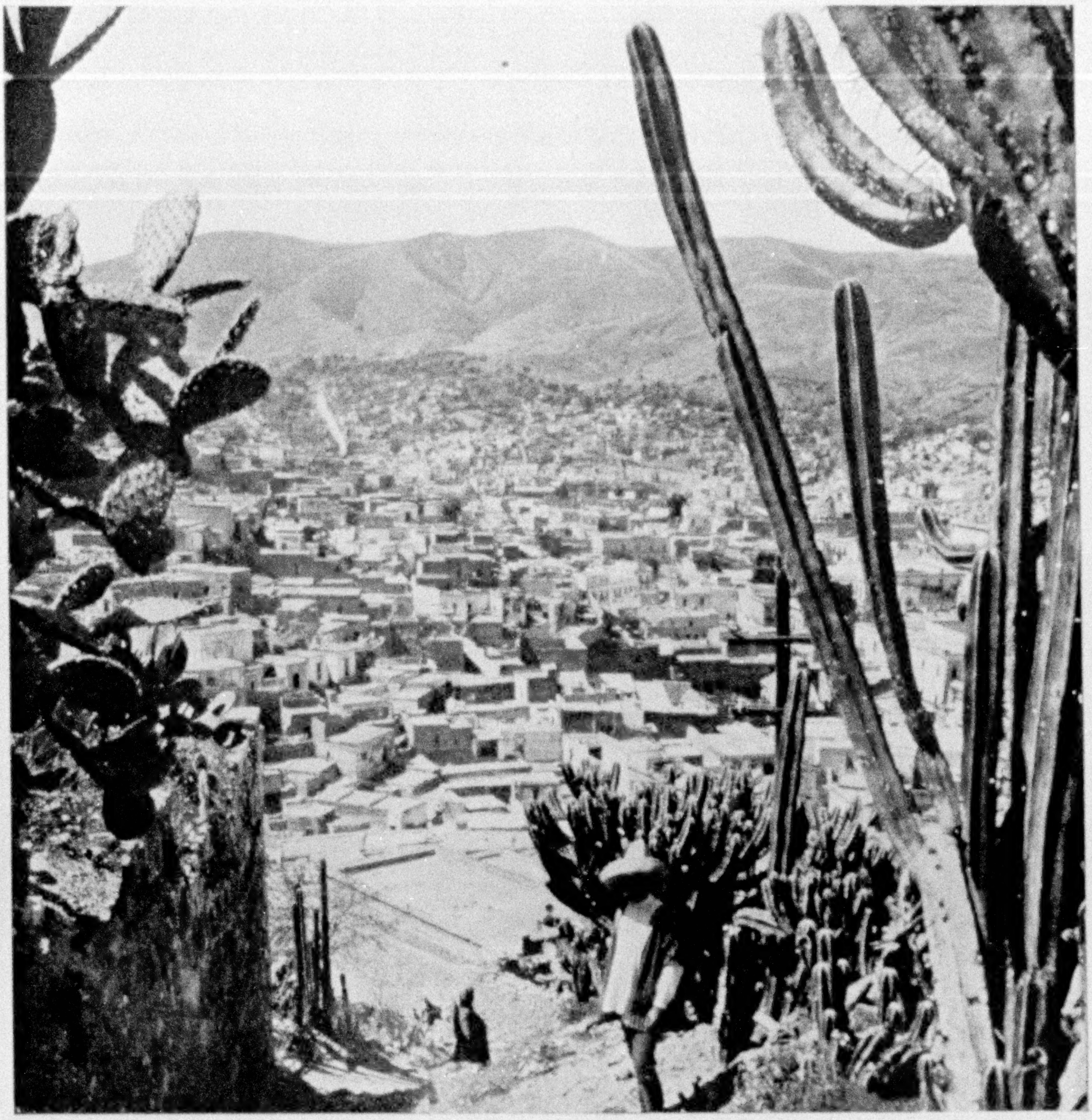
THE HILL-SURROUNDED CITY OF GUANAJUATO, MEXICO

This city received its name from the Tarascan Indians. It means "The Hill of the Frogs." It is said that here the Chichimecs, wanting a better god to worship, set up an image of a frog.



THE MINING TOWN OF LA LUZ, NEAR GUANAJUATO, MEXICO

From the discovery of America to the present time the world's production of silver has amounted to approximately twelve billion ounces troy, or a little less than 472,000 tons avoirdupois. Mexico has probably contributed more than any other single country to that total, and most of her annual output has come from the Guanajuato region.

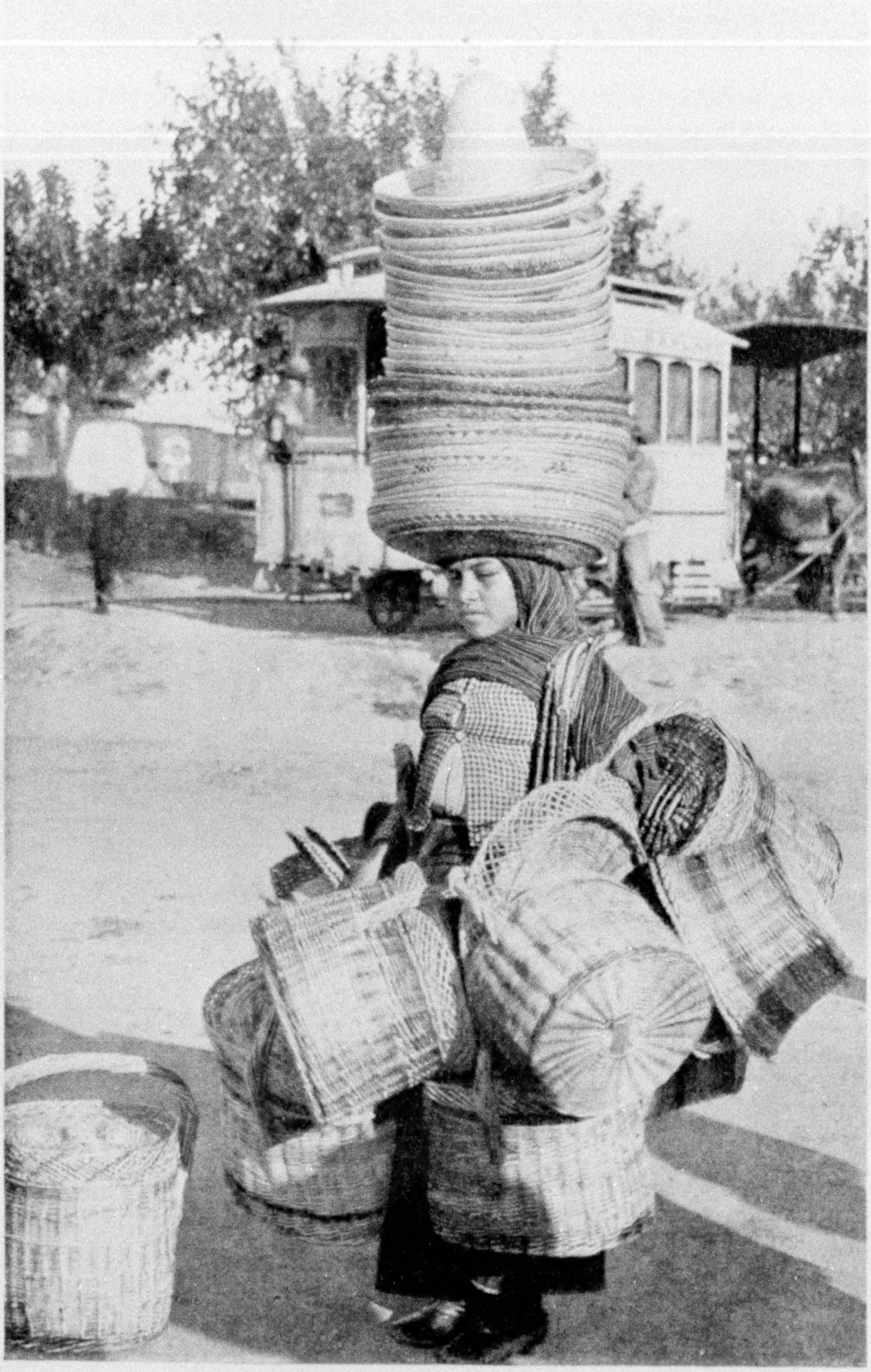


VIEW OF GUANAJUATO, MEXICO

The city of Guanajuato is the capital of the State of the same name. It is built on the slopes of a mountain range and has a population of 40,000. Guanajuato is celebrated as one of the famous silver-producing regions of Mexico, and it is this industry which has been the foundation of the prosperity and development of the city.

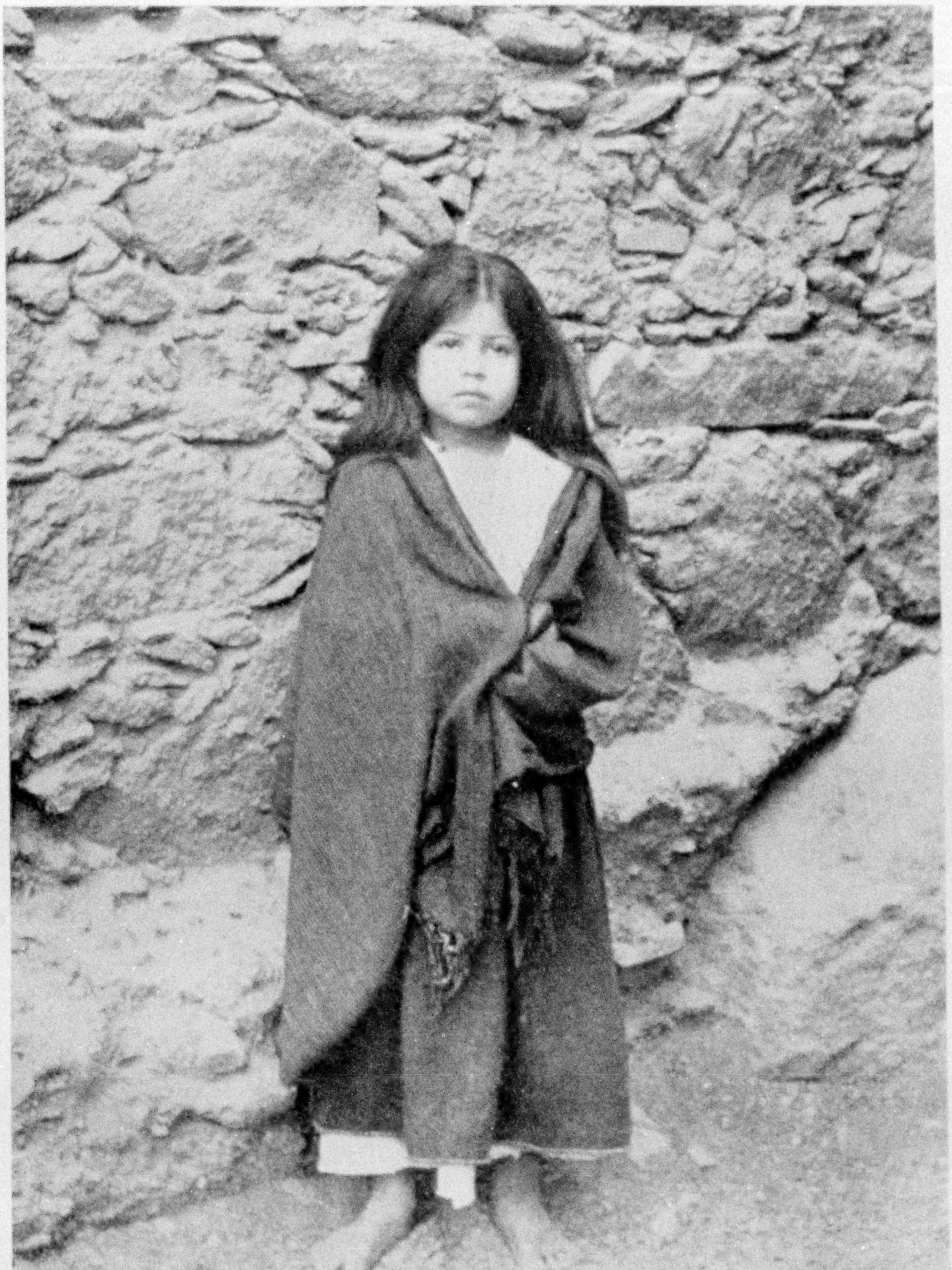
A grotesque dummy figure is paraded through the town, followed by the jeering and cheering crowds, who have risen early to give expression to their righteous indignation against the betrayer. After circling the city, the procession halts, Judas is promptly yanked by ropes from the bearers and dangles in mid air, a sorry sight, spit upon, cursed, condemned, consigned to everlasting purgatory, to which place, at sunset, he is sent by the explosion of dynamite concealed in his carcass. Ribaldry runs riot as the day advances, and night falls on an exhausted, though happy, people. What matters if the prison is overcrowded that night, or that the supply of pulque or mescal is depleted almost to the degree of exhaustion?

To the casual visitor from the States the habits and customs of these lowly people are strange, but fascinating. They do not need our commiseration or sympathy; they are content in their mode of living, and who shall say that they are



A WALKING WICKER STORE IN MEXICO

The Indian women of Mexico are industrious. Wages are so low that every hand must help to feed a mouth, else many would feel the pangs of famine. Prices of hand-wrought commodities are as low as the scale of wages. Baskets that would cost a dollar here may be bought for a quarter there.



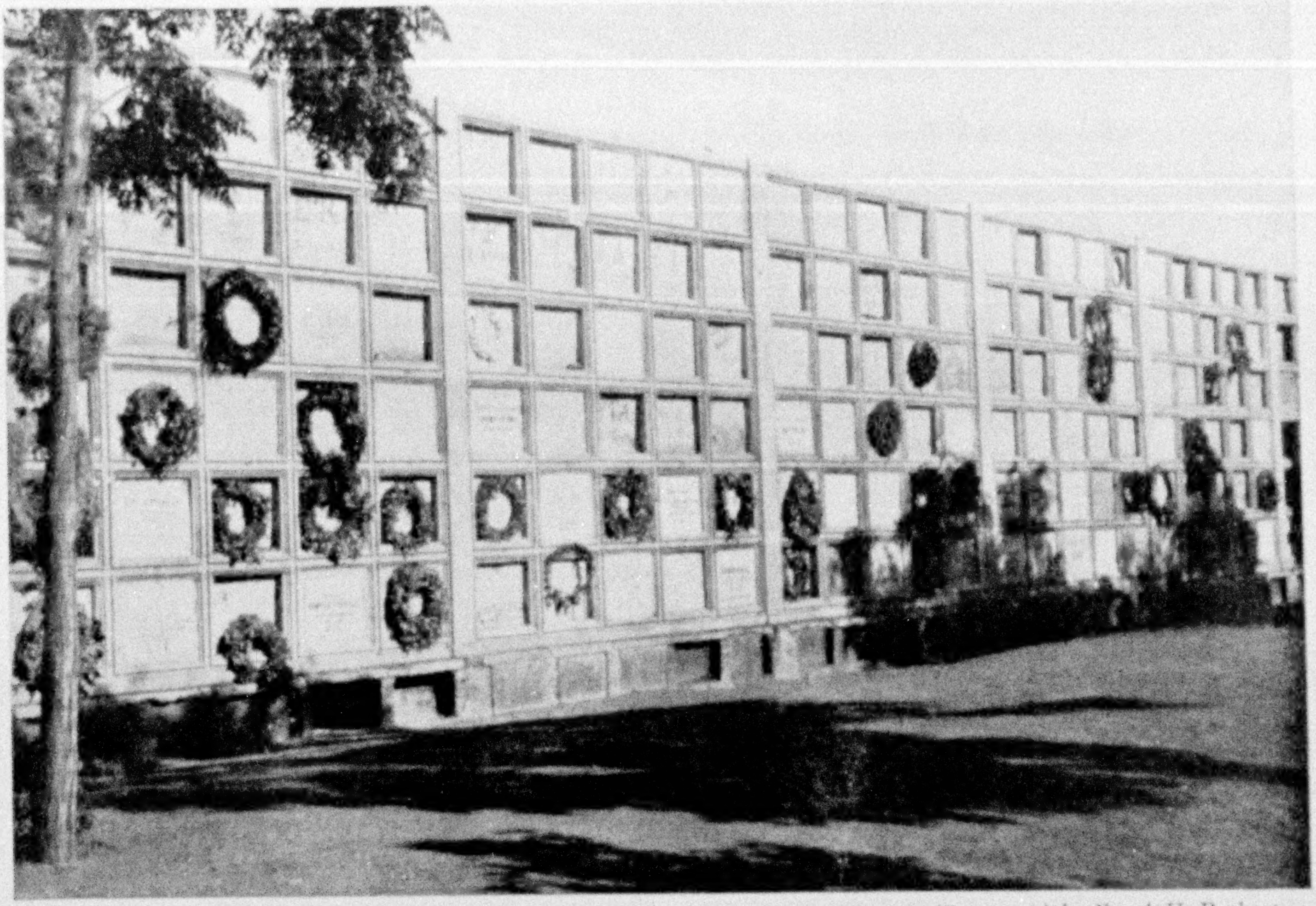
INDIAN GIRL: GUANAJUATO, MEXICO

The pure-bred Indians of Mexico who have held aloof from the white man's civilization are clean, wholesome, honorable people. One who knows them and the simple dignity and sense of honor they possess cannot but lament the fate that has caused their less fortunate brethren to see and imitate the worst side of the more civilized races.

XUM

YOKES THAT ARE HARD AND BURDENS THAT ARE HEAVY

No traveler in Mexico with the milk of human kindness in his make-up can avoid a regret that a land of such rich undeveloped resources should afford such a poor living for so many of her people



Photograph by Frank H. Probert

"BEWREATHED AND VAULTED TOMBS" IN A MEXICAN CEMETERY

Rentals are for perpetuity, for five years, or, in the case of the very poor, for one year. In highland Mexico mummies are often taken out of the tombs and stood up, draped in sheets, in long rows against the wall. The sight is gruesome in the extreme.

the less happy or human in their habitat than many of us? There is a lot of sympathy wasted in this world, and maybe if we highly civilized and sensitive creatures lived closer to old Mother Nature and listened to her teachings our ills and ailments would vanish into thin air. Riches and poverty, sickness and health, joy and sorrow, leisure and work—in the abstract these are only relative, and our understanding of them is based on the environment in which we live.

KNOWS HE WAS BORN TO SERVE

The Mexican peon knows that he is born to serve, as did the old southern darky, and caste or class distinction is emphasized on all occasions. The mozo rides silently behind the lordly caballero; the peon woman steps into the street and bows her head as the padre passes; in the plaza on Sunday evening, when the melody of martial music fills the air, the upper classes parade in one direction, while the peons gyrate as an outer ring in the opposite direction. As a class they are industrious and skillful if the time element is eliminated.

The peon miner is a competent workman when unhampered by modern machines and has a "nose" for ore that is truly remarkable. As tillers of the soil their methods are primitive, but productive; they still use oxen and the wooden plowshare, and the fields are fenced with imperishable dry-rock walls. In the making of pottery and basketry they excel; in tanning hides, saddlery, and the working of metals they are inimitable. The women, too, can grind corn on a metate, cook tortillas and frijoles, raise families, launder clothes on a rock near the creek, make the most exquisite laces and the finest of drawn work with equal skill.

A SONG FROM THE DEPTHS

I recall an interesting experience at the Nueva Luz shaft, the deepest shaft on the Veta Madre today. It is 2,031 feet deep, cut out of solid rock. Iron buckets,

Photograph by John H. Hall

CHURCH OF NUESTRA SEÑORA DEL CARMEN: MEXICO CITY, MEXICO

Mexico City is famous for its old churches. The American who visits that capital and becomes a guest at the historic old Iturbide is likely to conclude that all the church bells in Christendom have been gathered there to be rung simultaneously. Del Carmen, though old, has a new façade and a new tower with dome of blue, white, and yellow tiles. It stands in the poorest quarter of the city.

Photograph by Capt. D. H. Scott, U. S. A.

A MEXICAN OASIS 200 MILES SOUTH OF COLUMBUS, NEW MEXICO

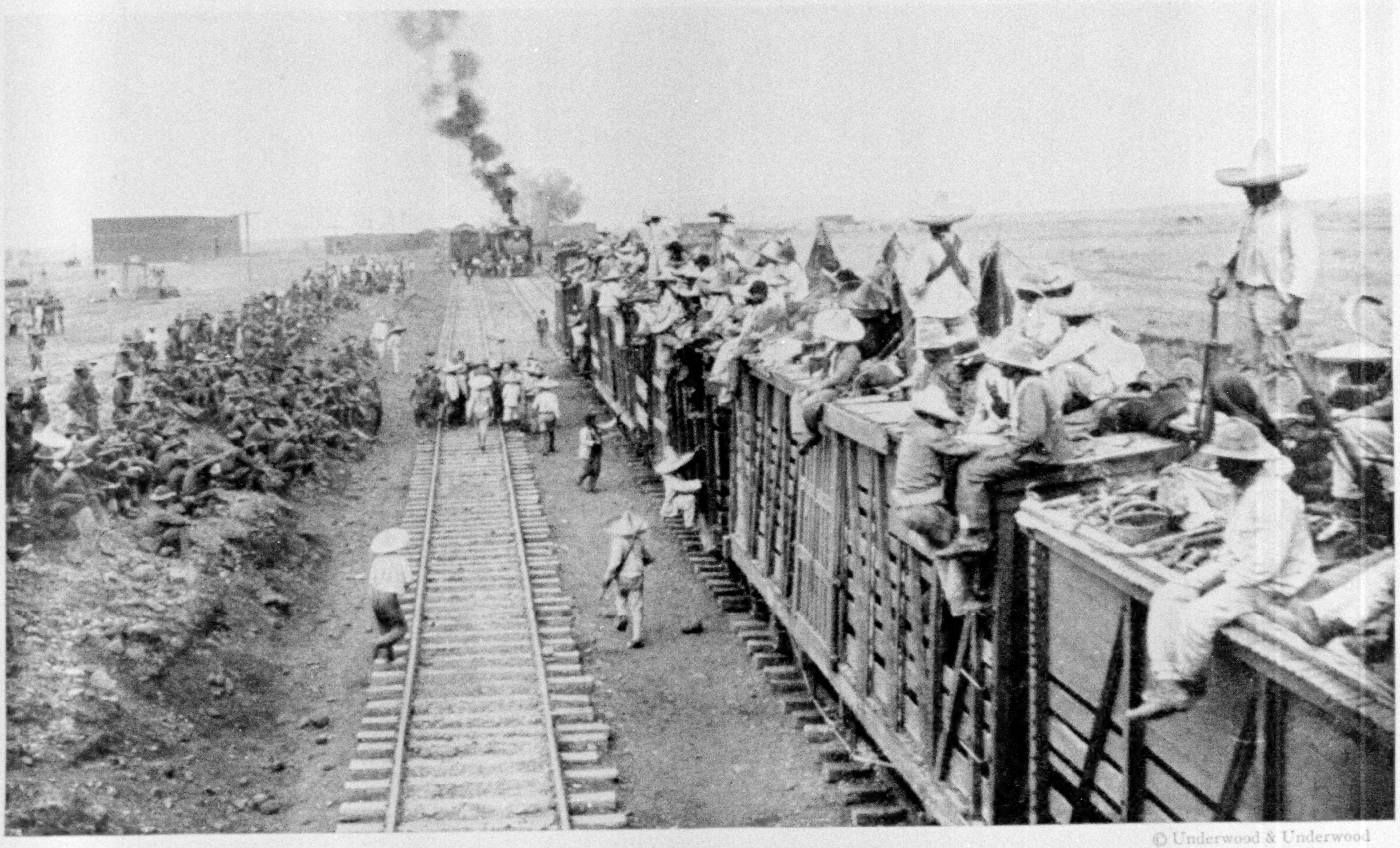
With its banks shaded by cottonwood and its waters teeming with trout and striped bass, this stream affords a welcome camp site for American troops. The surrounding country is a treeless, trackless waste, with the nearest water 30 miles away to the north and south.

XUM

Photograph by Capt. D. H. Scott, U. S. A.

UNITED STATES TROOPS IN CAMP SOUTH OF COLUMBUS, NEW MEXICO

Not in the commodious tents familiar to militia camp visitors, but in these "pup tents," as the soldiers call them, our fighting men make their homes for months at a time while on active service. The illustration shows how brush and trees are utilized in the effort to mitigate the heat and glare of a semi-tropic sun in a cloudless sky. This camp is on the Sta. Maria River, 250 miles south of the United States border.



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MEXICAN TROOP TRAIN WAITING FOR A CLEAR TRACK NEAR AN AMERICAN CAMP

This picture was taken in the days before the Mexican Government peremptorily demanded the evacuation of Mexican soil by the American Punitive Expedition and in the days when it was thought that Mexico would aid the American troops in capturing and forever eliminating Villa. Good-will then existed between the soldiers of Mexico and those of the United States and "amigo" was the word. Today, however, "greaser" and "gringo" seem to be more popular.

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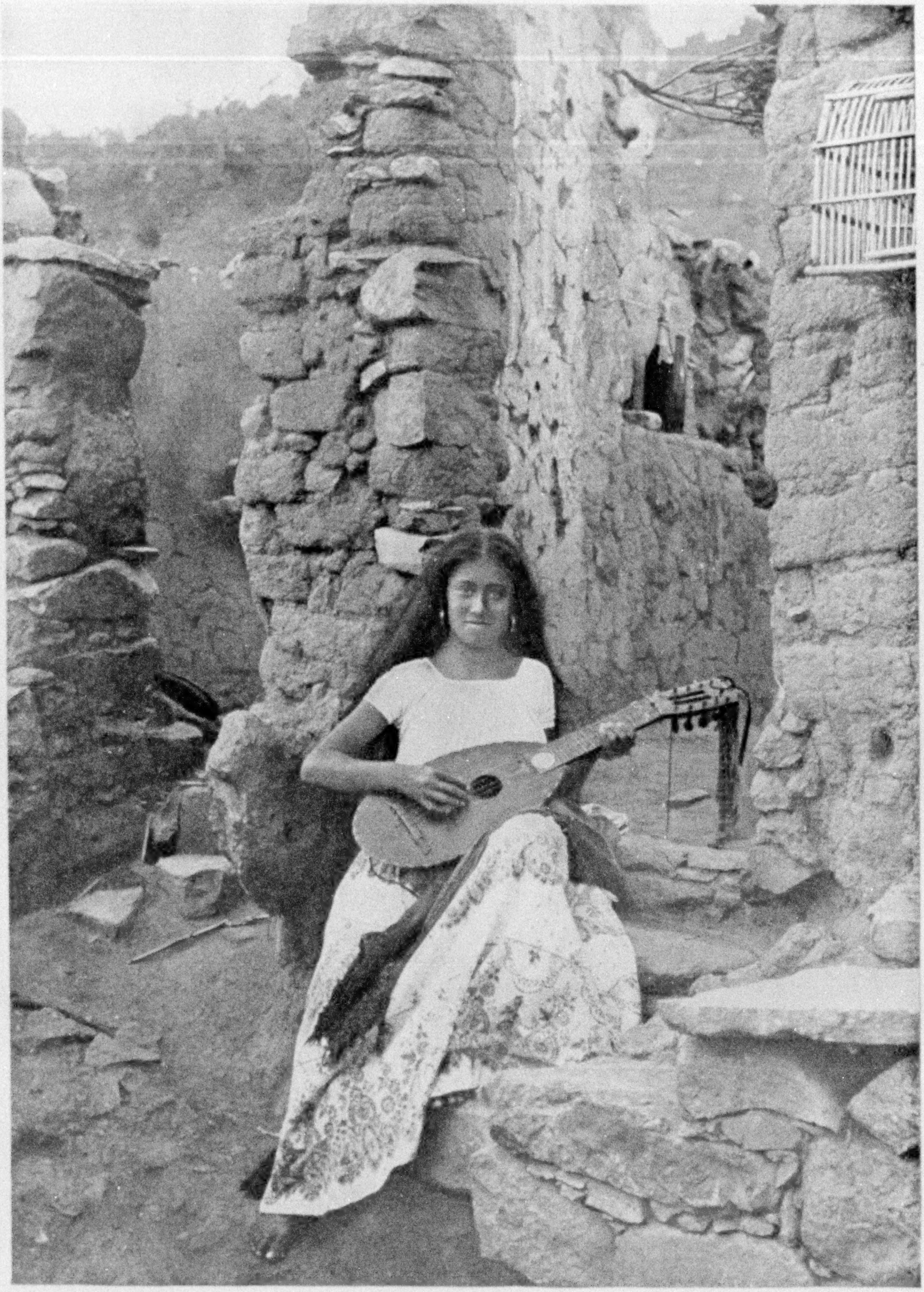
POOR PEONS IN SALTILLO, MEXICO, WAITING FOR MONEY TO BE DISTRIBUTED BY CARRANZA'S REPRESENTATIVES AT THE GOVERNOR'S PALACE

Four-fifths of Mexico's population is made up of Indians and their mixed-blood descendants. They are naturally as improvident as our own Indians, even less fitted for the duties of citizenship than ours, and the twelve millions of them who are forced in war times to go half starved and in peace times are underfed make a pathetic picture as one journeys through their country reckoning up their woes.



Photograph by Harriet Chalmers Adams

THE LOVE OF MUSIC SEEMS TO BE UNIVERSAL IN MEXICO

Among the Indian tribes who live away from the haunts of white men the women are noted for their virtue. The tribe insists upon the most rigid maintenance of the moral code, and the woman who errs is ostracized.

XUM

WATER-CARRIERS: CULIACÁN, MEXICO

In this picture one may indeed read the story of highland Mexico. In the solid-wheeled, wooden-axled cart the unprogressiveness of the country appears; in the barrels we see the needs of a thirsty land, where pure water is about as hard to get as good food; in the sleepy-eyed, woe-begone donkeys, with their rickety harness, we recognize that drowsy and shiftless spirit of mãnana which seems to pervade whole nations.

A THREE-HANDED GAME OF MONTE

The Mexican peon loves excitement, and while bull-fighting is his first enthusiasm and cock-fighting a substitute for times and places which offer none of that amusement, monte and keno are the ever-ready means of relieving the tedium of quiet.

guided by wire ropes, are used for hoisting men, rock, and supplies, and even an experienced engineer is excused a feeling of fear and trepidation when straddling the bale over this yawning hole. The almost nude natives, oblivious of danger, jumped aboard, holding their torch of candles in the free hand, and as they were lowered began to sing. A flood of melody filled the shaft, a full crescendo reverberated from wall to wall, followed by softer cadences, and as I peered down into the hole the bucket continued its slow descent, the lights of the torches became more and more indistinct, the darkness deepened, the prayerful song came up with decreasing volume until it seemed like a distant echo from the unknown. Then there was no light visible; no anthem audible, and I involuntarily said "Amen."

Guanajuato is a city rich in historic record, in its mines, in its natural beauty, and in its architecture. To describe even briefly the many things of interest would occupy more space than can be given to this article; but mention must be made of the theater, the prison, the Pantheon, the Esperanza dam, and some of the many churches along the Veta Madre.

El Teatro Juarez faces the plaza in the center of the city. It is an imposing pile, perhaps out of keeping with its surroundings; but Guanajuato is a city wherein the picturesque and strictly practical are irreconcilably mixed together. The de-

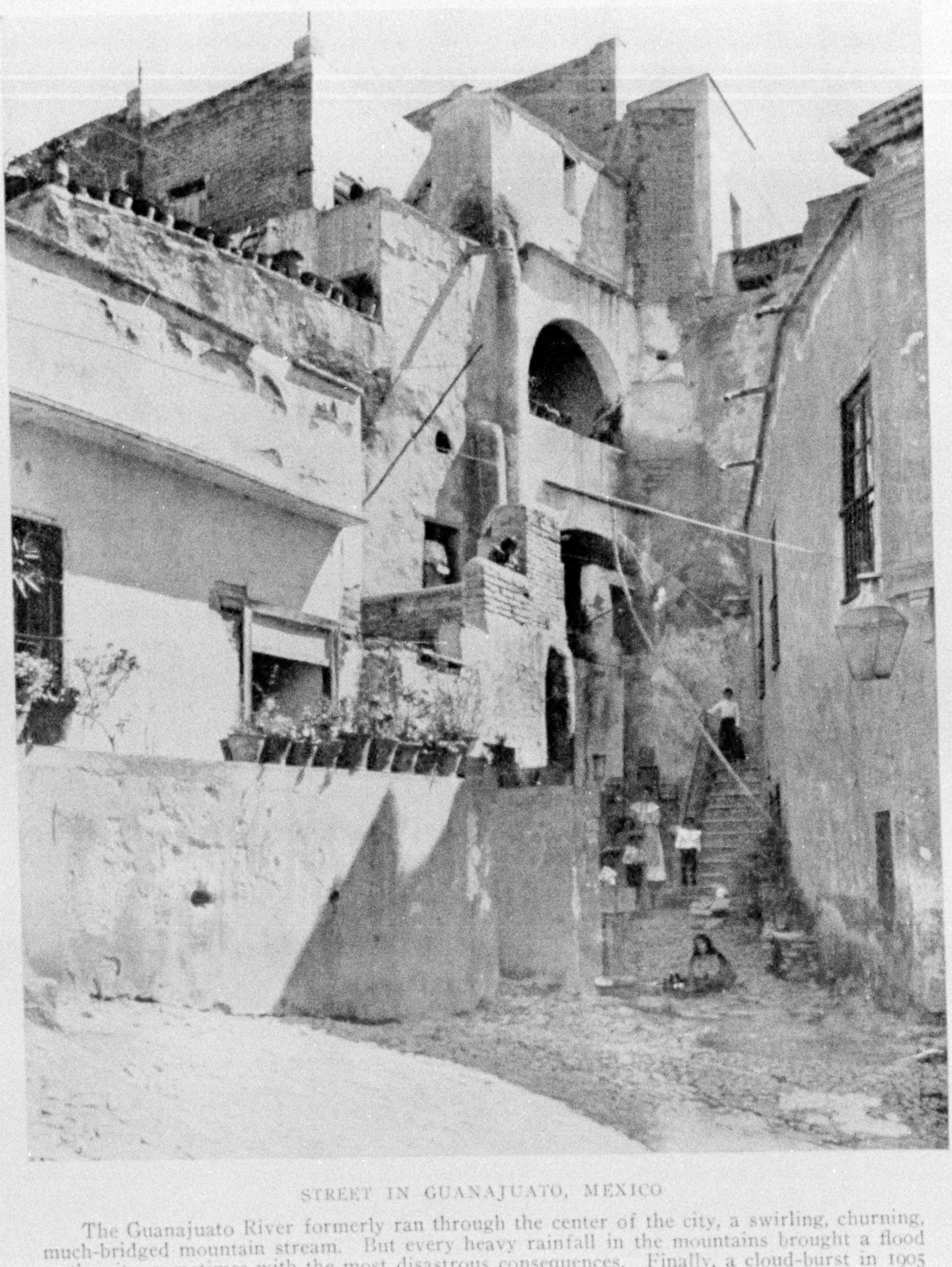
STREET IN GUANAJUATO, MEXICO

The Guanajuato River formerly ran through the center of the city, a swirling, churning, much-bridged mountain stream. But every heavy rainfall in the mountains brought a flood to the city, sometimes with the most disastrous consequences. Finally, a cloud-burst in 1905 caused so much damage that a tunnel was constructed to divert the overflow. The project cost $350,000.

A CARAVAN OF PACK ANIMALS COMING IN FROM THE COUNTRY

Americans are wont to employ the mule as a symbol of stubbornness and to speak of the donkey as the epitome of stupidity, but patience and meekness are the outstanding characteristics of these animals in Mexico. With rations on which an American sheep or a European goat would go hungry, the burdens which these poor beasts are forced to bear are out of all proportion to their strength and size, and they are driven many a weary mile over bridle-paths where a horse would find hard traveling; yet they are always docile and uncomplaining, as if adversity were a stranger to them. Imagine a dozen donkeys transformed into as many lumber wagons, with long, heavy boards strapped on each side, and driven a dozen miles without food, except now and then a chance bit of prickly foliage which they manage to nip as they walk along!

XUM



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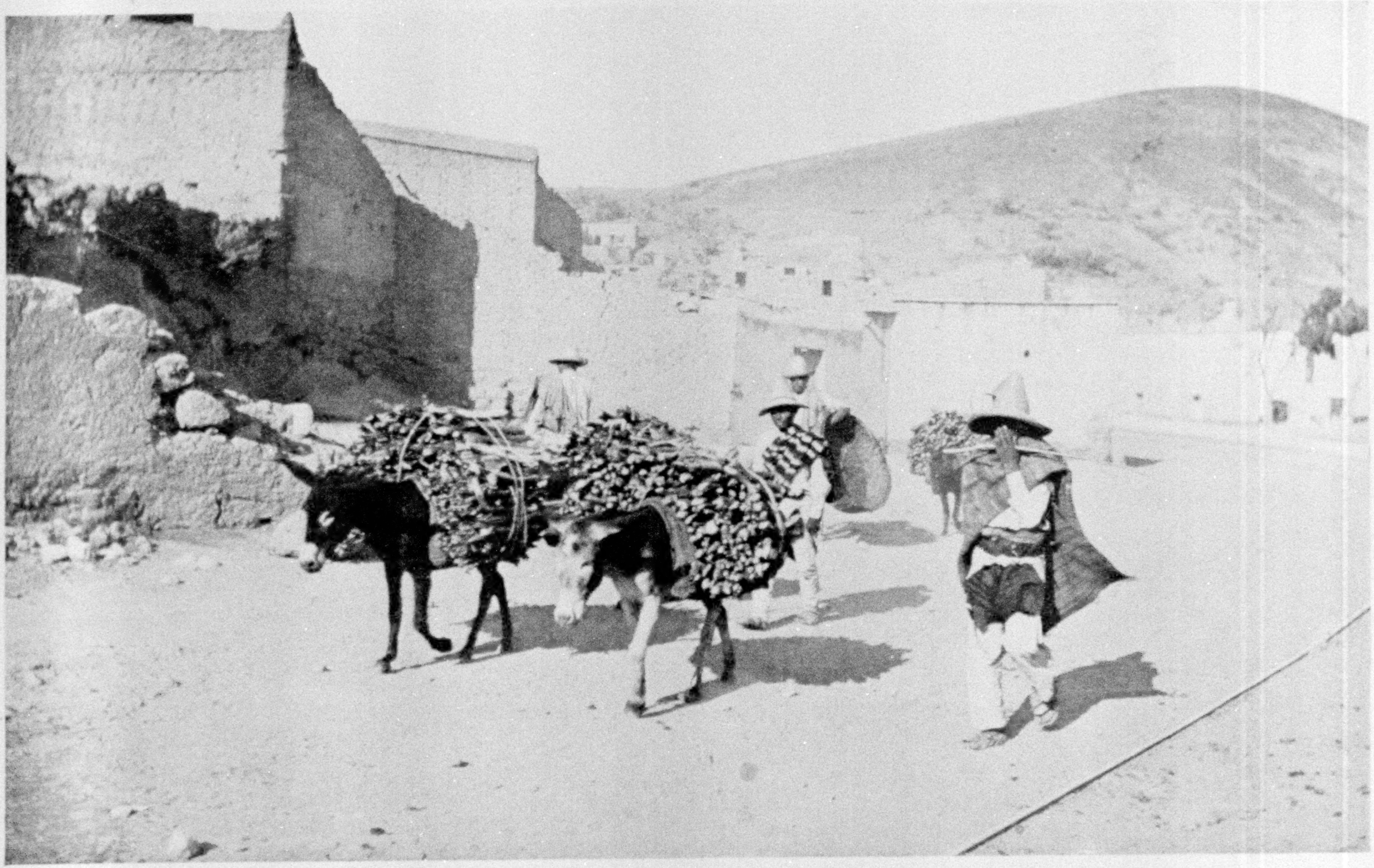

TAKING FIRE-WOOD TO MARKET: MEXICO

The meek and long-suffering donkeys of Mexico find life no bed of roses. Receiving no sympathy or consideration from his fellow-man, the peon, in turn, has none for his donkeys. "All they can stand under" is a load, and "until they are ready to drop" a day's march. What a field for an active society for the prevention of cruelty to animals!

sign is modern and highly decorative, built of the local green tuff and sandstone. The superb portico, with its eight bronze figures, is borne on twelve Ionic pillars; the imposing steps, with stately flambeau, the wrought-iron grille work, the spacious foyer, and the richly decorated interior by Herrara are truly magnificent.

The Alhondiga de Granaditas (prison) is as constantly full as the theater is empty. It is one of the most historic buildings of the Republic, and will always be remembered not as a storehouse of grain, not as a prison, which it now is, but as the place where the first blow was struck for the liberation of Mexico from Spanish rule. Quadrangular in shape, with a central patio, a row of small Moorish windows near the top, the lower floor Tuscan, the upper Doric, the building has no architectural beauty.

At each corner is a large hook, from which, in the days of the struggle for independence, were hung four iron cages containing the heads of the great liberators—the patriot priest, Hidalgo, his military chief, Allende, and his comrades, Aldama and Jimenez. Here they hung for years until removed by a worshiping nation to the Altar of Kings in the cathedral of the City of Mexico. After the Grito de Dolores and the first ringing of the bell of Independence, Hidalgo and his followers moved on to Guanajuato, stormed the improvised fortress of Alhondiga, and killed all the Spanish troops that had taken refuge there. This was the beginning of the eleven years' war of Independence.

GRINNING MUMMIES IN GHASTLY ARRAY

On the summit of the Cerro del Trozada, to the west of the city, is the Pantheon. The four high walls surrounding the cemetery consist of vaults, tier upon tier, in which the remains of the dead are placed *pro tem.* or in perpetuity, according to the ability of the surviving relatives to pay the rent. It is not an uncommon but a gruesome sight to see a burro plodding wearily up the hill with a casket, hired for the occasion, strapped on its back.

At the gates disposal of the remains is summarily made if the deceased was poverty stricken, or maybe a niche in the walls is rented for a period of five years, after which time the bones will be placed in a common ossuary. For a small fee the attendant will admit the visitor to the "chamber of horrors." A winding stair leads to the crypt, where ghastly, mummified remains are placed in a ghostly row, grinning resentment at the curious.

El Palacio Legislativo is another civic monument, designed by Louis Long and decorated by Nicolas Gonzales and Claudio Molina. It is an edifice of three stories, the first floor being the Hall of Congress, containing many oil paintings of national heroes.

The water supply of Guanajuato has been carefully planned. It is both ample in quantity and of good quality. The run-off from the mountainous watershed is impounded by a series of dams of excellent structural and artistic workmanship. The Esperanza dam, built of native stone, is 95 feet high and wholly in keeping with the extravagance of a munificent municipality.

GUANAJUATO'S MANY CHURCHES

If the religious fervor of the people is measured by the number of churches, then surely we are in a pious community. In the city proper are many historic piles, with painfully modern interiors. Perhaps the finest is the Compania, a Jesuit foundation, built in 1747-1765. Its single tower contains some bells of exceptionally fine tones, the largest of which was blessed, in 1852, by Bishop Timon, of Buffalo, then resident in Mexico. The Jesuits founded their first church in Guanajuato in 1557, which later became the Collegio de la Purisima Concepción. The venerated image of Nuestra Señora de Guanajuato, the gift of Philip II of Spain, was enshrined here until moved to the parish church of San Francisco, dedicated to San Juan de Dios and completed in 1696. After the suppression of the Juaninos by the Franciscans, in 1828, the original beauty of this sacred edifice was lost in its renovation, so that today it is a distressing patchwork.

Photograph by Pain

LOVE IN A COTTAGE

Although there is not a nail or a screw nor yet a pane of glass or a touch of paint in their house, and although everything that enters into its construction is nothing more than the salvage of the streets, this lazy peon and his hard-worked wife are perhaps as content with their lot as the owner of the best house in America.

CARRYING BLEACHED PALM LEAVES FOR MAKING HATS: NEAR ZITACUARO, MEXICO

Every day in the year is straw-hat season in peon Mexico, and it takes millions of them to go around; so the sombrero business is always a thriving one, war or no war; and the Mexican peon is more fastidious about his sombrero than the American woman about her Paris bonnet.

XUM

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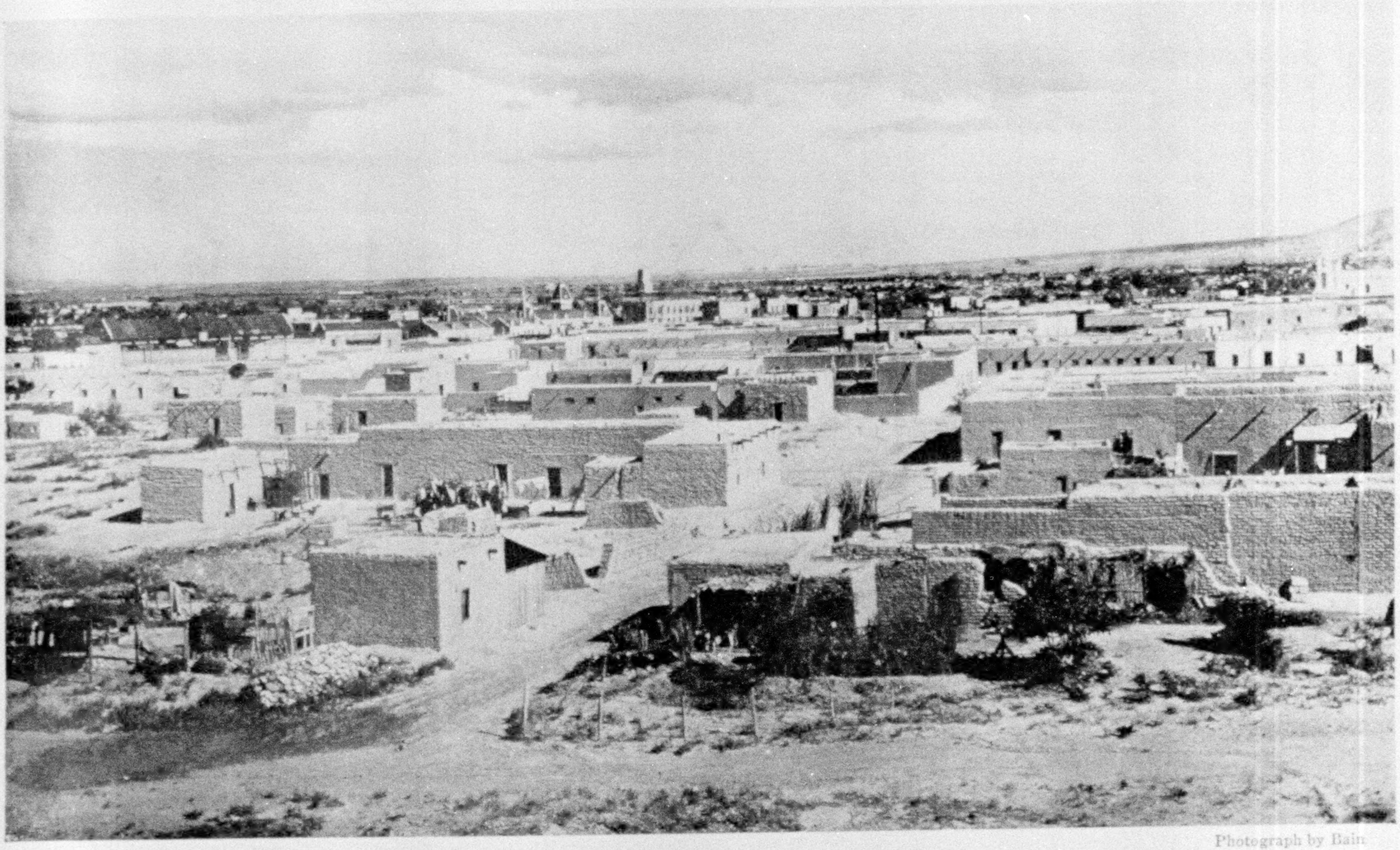
FOLLOWING THE MOUNTAIN TRAIL IN QUEST OF THE MEXICANS WHO RAIDED GLENN SPRINGS

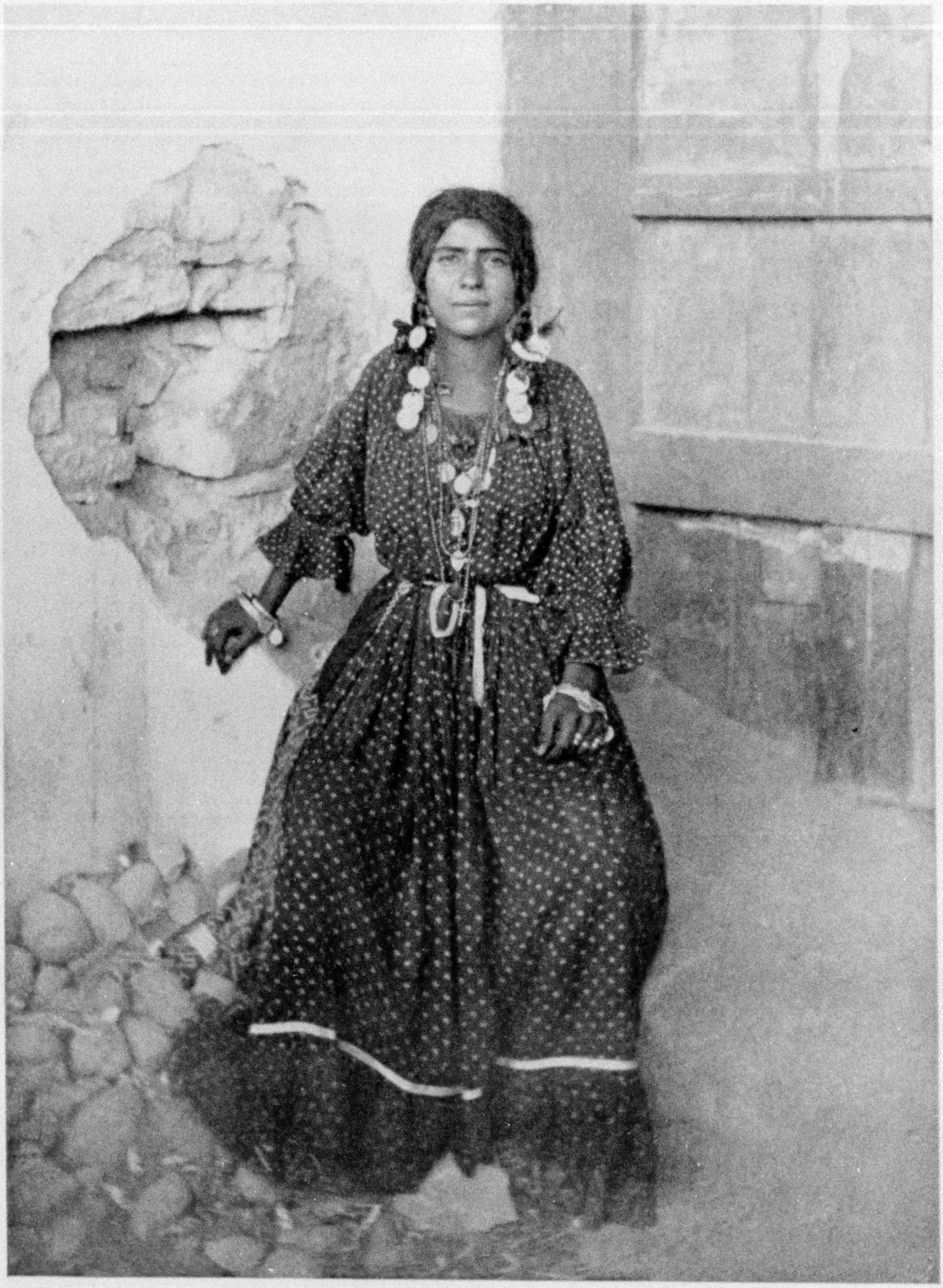
This picture affords some conception of what campaigning in northern Mexico means. The Mexican highlands are to Mexico what the Great American Desert was to the United States a century ago—inhospitable, sun-parched, cactus wastes, with here and there an adobe city rising out of the plains or set among the barren hills.



Photograph by Bain

A VIEW OF PARRAL, ONE OF THE MINING CENTERS OF MEXICO

This gives one a good idea of the poorer quarters of most of the cities of Mexico. Windowless houses are the rule rather than the exception, the door serving alike for the entrance of man and light and the exit of smoke. Perhaps two-thirds of Mexico's population lives under such conditions as these.



A GYPSY FORTUNE-TELLER: SAN LUIS POTOSI, MEXICO

San Luis Potosi is another of those Mexican cities with a population of more than 60,000 which causes the traveler to wonder how it manages to exist. The country around is so dry and parched that it would seem that it could not even partially provision a city of such size. But silver is the key to the secret. Mexican history shows that cities always grow close to silver mines, and that inhospitality of soil cannot counteract the magnetism of silver.

A RURAL HIGHWAY: SAN PABLO, MEXICO

The cactus fences of Mexico are an interesting sight to the foreigner. They have the valuable quality of permanency, although their tendency to spread out and appropriate more space than an orthodox fence should occupy is a disadvantage.

Photograph by James H. Hare

VERA CRUZ, WITH SAN JUAN DE ULUA IN THE FOREGROUND

The immense cost of San Juan de Ulua—reputed to have been 40,000,000 pesos—was enough to shock even Charles V of Spain. One day he was standing on a balcony gazing with hand-shaded eye intently into the west. "For what is your Majesty looking?" queried a courtier. "I am looking for San Juan de Ulua," replied the king, "for it certainly has cost me enough to be seen across the sea."

Still more pretentious and decidedly more picturesque are the churches on the Veta Madre, thank offerings for the material blessings vouchsafed to the chosen few in the early days of mining. Each mine supported its own thriving community, its priest, and its church. Cata, Rayas, and San Cayetano still raise their cathedral spires in peaceful benediction, their whitened domes reflecting the glories of the setting sun as their hushed aisles recall the ritual of the noonday of mining activity.

A WONDERFUL EDIFICE

The church of Valenciana (San Cayetano) has not been despoiled; neither time nor marauding man has changed its imposing grandeur; the grayness of its walls and the tarnish of its altars give to it an additional touch of peace (see picture, page 36). Antonio Obregon, to commemorate the finding of the great Valenciana bonanza, began building this church in 1765 and completed it 20 years later. The exterior ornamentation suggests Arabesque influences, but the architecture is unknown. Above the dome is an arrow, supposed to point the direction of the Mother Lode. Its interior decoration, altars, and furnishings testify to the lavish hand of the builder. The high altar is heavy with silver; piers, arches, and roofs are elaborately carved and show the individuality of the artisans, and the inlaid pulpit is one of the finest in Mexico. Let us hope that this monument, at least, will long escape the desecrating hand of vandalism and the ravages of warfare.

Six years after the conquest of Mexico the old Spanish fortress of Santa Ana was built to repress the depredations of the Chichimecas, an Indian tribe, who were constantly menacing the travelers from Zacatecas to the coast. Twenty-two years later silver ores were discovered in this district, and an old document, found in the archives of the Court of Mines, Guanajuato, records the denouncement of the Rayas mine. Nine years later the Rayas and Mellado mines pointed conclusively to the existence of a mineralized lode—the Veta Madre de Guanajuato, extending from Tapeyac to Sierra. This was during the reign of Queen Elizabeth.

NO MUSHROOM GROWTH

The mining history of Guanajuato vies with that of the Nevadan gold camps of our days, only that instead of the unsubstantial mushroom growth, typifying the American mining booms, permanent and lasting monuments were raised, and remain as mute though eloquent testimony of former industry and wealth.

In the year 1600 there were 4,000 men at work along the Mother Lode. A few years later the Sierra vein system was found and, according to established custom, material blessings were reflected in pious charities. In the "Efemerides Guanajuatenşes" there is mention of the blessing of a baptismal font in the chapel of El Cubo. In 1619 a royal patent was granted to this industrial center, whereby it received the dignity of the name of Villa Real de Guanajuato.

That slavery flourished in these early days is evidenced by two proclamations of 1590 and 1667, prohibiting the sale of Indians as slaves and the branding of a slave in the face. In 1700 the Villa Real de Guanajuato claimed a population of 16,000, mostly recruited from old Spain. Mining methods were most crude, explosives were unknown, and the only way of breaking rock was by building fires against an exposed rock-face and, while hot, dashing cold water on it, causing it to crack and split off.

The eighteenth century marked an era of progress and unprecedented prosperity. A record of precious-metal production was established, which our Comstocks, our Tonopahs, Goldfields, and other Western bonanzas have not approached. Gunpowder was used in boreholes, pumping machinery was installed, and development advanced to greater depths; the output increased, and many of the peon mine-owners became so wealthy and attained such power and celebrity that they were granted patents of nobility by the King of Spain and were counted among the élite of the Spanish aristocracy. Francisco Mathias de Busto, owner of the Cata mine, became Viscount de Duarte; José de Sardaneta, on finding

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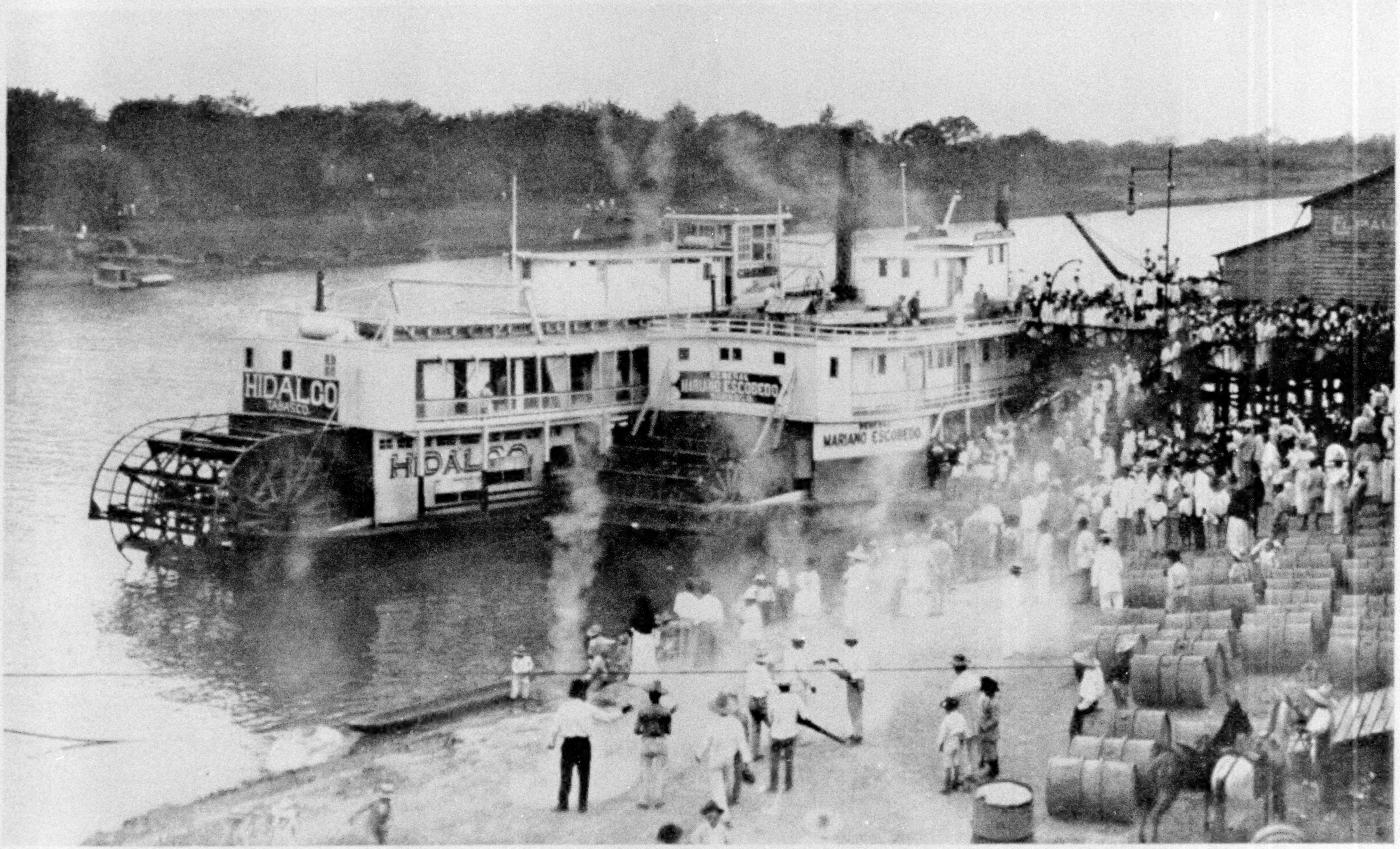

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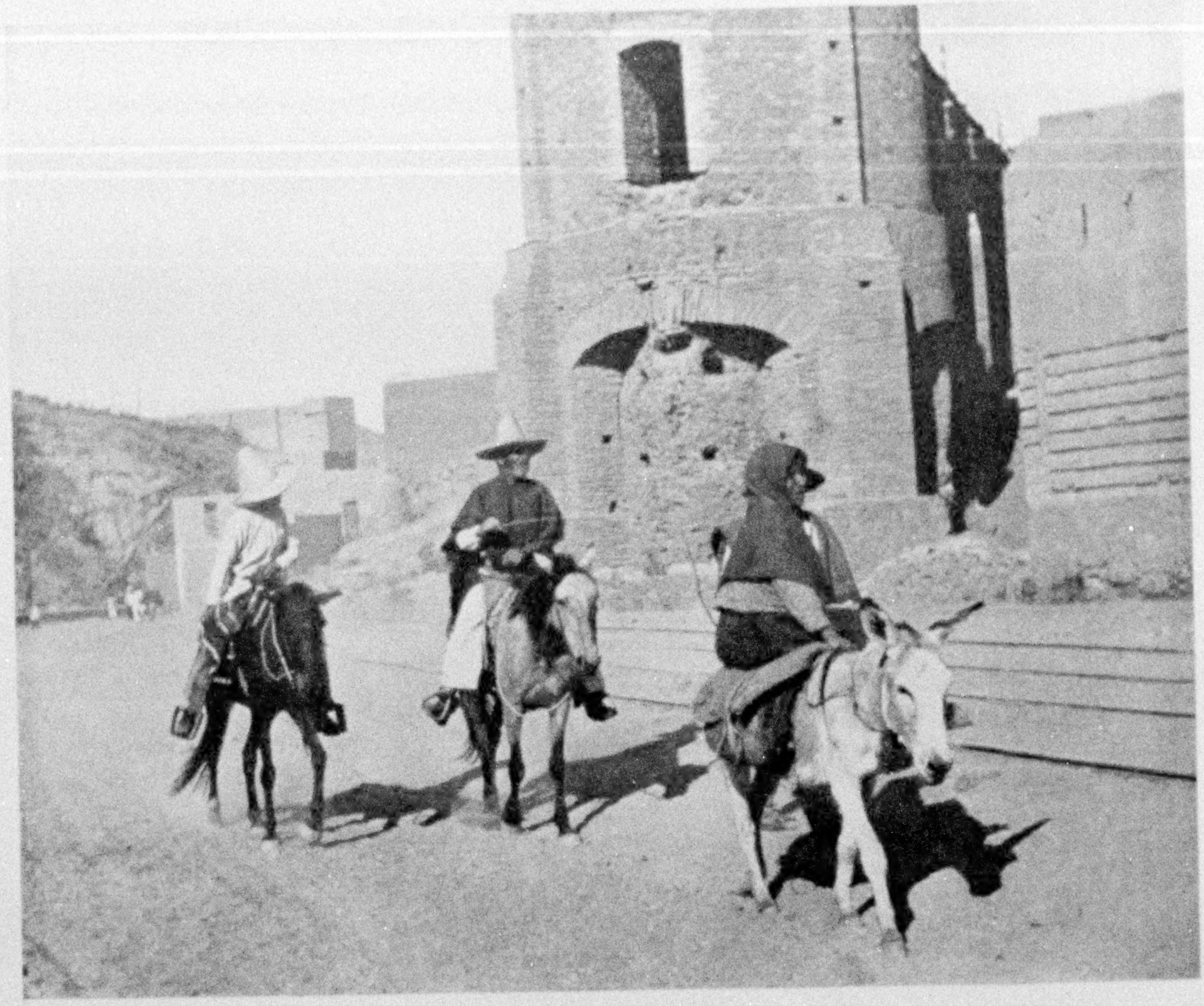
A RIVER MAIL STEAMER ON THE RIO GRIJALVA: STATE OF TABASCO, MEXICO

To us "tabasco" means something hot. To the Indian of the Isthmian country it means "damp earth." But when Cortez first landed on Tabascan soil he got a very warm reception. He announced that he "desired only a free passage for his men," and that if there were any blood spilt it would be on the Indians' heads. They resented the invasion, however, and for a little while hostilities were lively. The Tabascans finally gave up and friendly relations were established.

SADDLE MOUNTAIN; MONTERREY, MEXICO

Standing perpetual watch over Monterrey, this mountain is known throughout the Republic, for it appears on the label of the beer that has made the Mexican Milwaukee famous



PEONS COMING TO TOWN: HIGHLAND MEXICO

The rural peon visiting the city for a day usually has what seems to him a good time. The most essential requisite is enough money to buy pulque in sufficient quantity to produce that hilarity which makes one forget his work for the nonce.

the Santa Rosa and San Miguel bonanzas in the Rayas mine, was created Marquis de Rayas, and Antonio Obregon y Alcocar, the discoverer of the great ore shoot of the Valenciana, was made Count de Valenciana.

PROSPERITY - BEGOTTEN PIETY

The munificence of these grandees found expression in works of piety. Obregon built the church of Valenciana, already described. Rayas commemorated the San Miguel bonanza by an enduring monument at the mine, the sculptured portal being surmounted by a statue of the archangel Michael.

In 1741 Guanajuato was made a city, and had at that time nearly 100,000 inhabitants.

The deepest shaft on the Mother Lode, until very recent years, was the Tiro General, at the Valenciana mine. It was sunk by Obregon at a cost of one million pesos, but the bonanza it uncovered yielded over three hundred times its cost. It is 1,807 feet deep, 32 feet in diameter, octagonal in section, and lined with solid masonry for the first 100 feet. In striking contrast to our modern shafts, not a stick of timber was used to support the walls. Hoisting was accomplished by mule power. Eight malacates, or horse whims, one hoisting from each face of the octagon, raised the broken rock to the surface in rawhide buckets. Water now stands in the shaft 600 feet below the collar, and during the summer solstice, when the sun is directly overhead, rainbows play in the mist above the water. There is something strangely weird about this great hole.

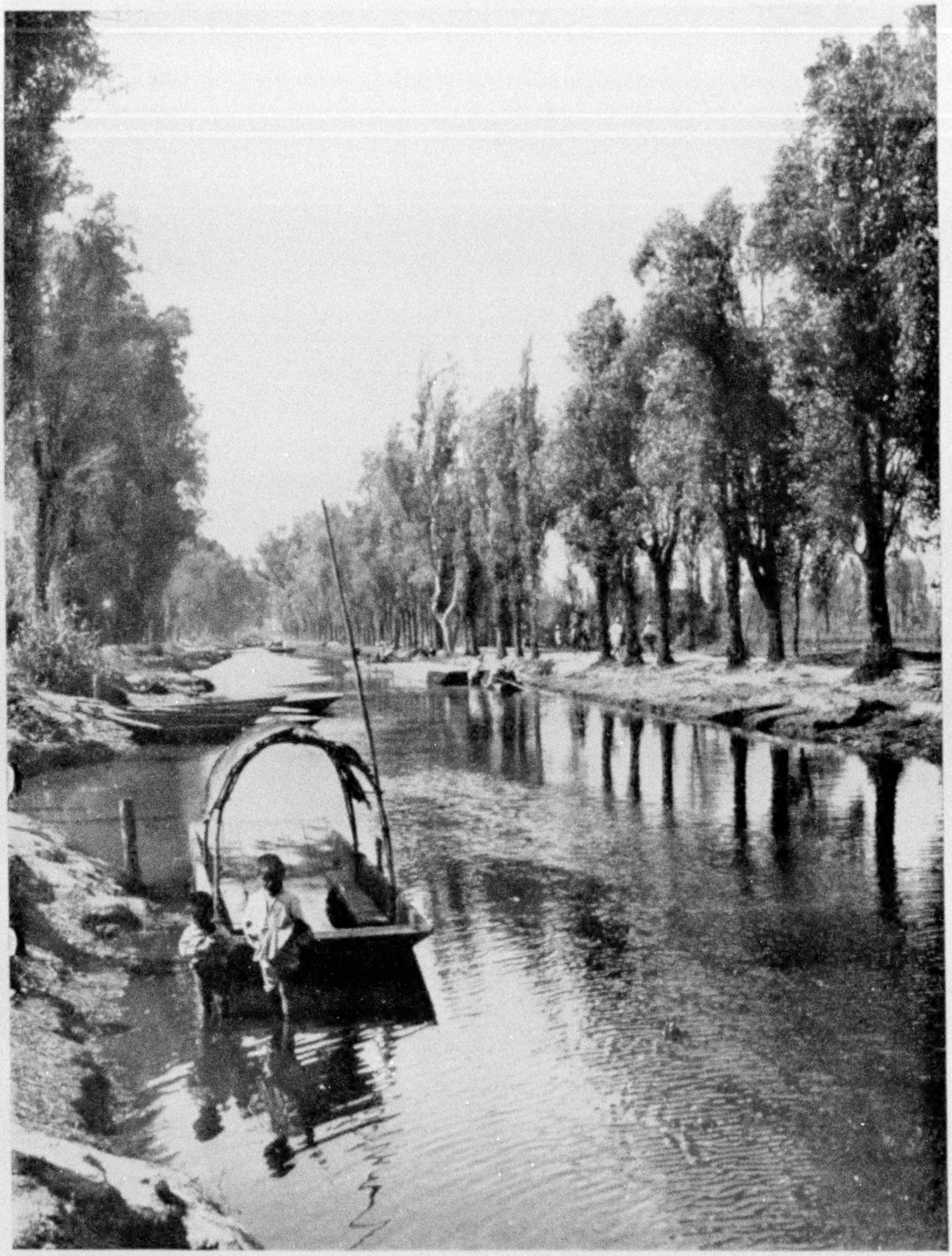
The Rayas shaft, 1,400 feet deep, also

THE CATHEDRAL: MEXICO CITY, MEXICO

This splendid structure is one of the most imposing ecclesiastical edifices in the western world. Situated on the north side of the Plaza of the Constitution, on the east side of which stands the "White House" of Mexico, it occupies a position commensurate with its architectural and religious dignity. It is said that devout Mexicans contributed $1,850,000 to its interior decoration.

octagonal, is wider still, being 38 feet across, while the Cata, 20 feet wide, reached down to the silver shoots 1,000 feet below.

In those days, when the tithes paid the King of Spain ran into millions of pesos, the Veta Madre was honeycombed with mine workings, bonanzas were exhausted, while others were being sought; each mine was surrounded by high solid masonry walls, and entrance to the patio was through guarded gates. Mining operations were conducted on a large scale, but, while labor was cheap, costs were heavy, appliances crude, water was an unsurmountable obstacle, methods of treating ore most primitive, and geological knowledge almost a negligible quantity. The output began to fall off in 1810, and during revolutionary times work was practically suspended. Nearly a hundred years elapsed before interest was revived in the Guanajuato mines. Recent chemical, mechanical, and geological researches may give the Guanajuato district another long lease of life.



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VIEW DOWN THE VIGA CANAL: MEXICO CITY

This tree-lined waterway is as picturesque as a Venetian canal, if one forgets the crumbling palaces; but one cannot help lamenting that it enters the city by the back door. On week-day mornings the busy boats carry food and flowers to the city, making it appear as if Mexico were fed and decorated via this canal.

THE VENICE OF MEXICO

By Walter Hough

ONE of the pleasurable experiences among those that delight the traveler in Mexico is a visit to the home of the Aztec lake dwellers. Much of the charm of the great Valley of Mexico, where they live, is due to the stretches of water among the trees and verdant fields in a landscape framed in beautiful mountains and bathed with clearest air of heaven.

Their lakes — Texcoco, Xochimilco, Zumpango, and Chalco—do not reveal themselves except from the high mountains encircling the valley. They are shallow bodies of water in the midst of extensive marshes, unapproachable, and lacking the effect of our lakes with their definite shore-lines. For this reason, they have never been highways of civilized commerce, nor has navigation flourished in their shallow waters; but they were from these very hindrances destined to be jealous mothers of ancient and remarkable States, whose people, protected in the fens, dug out canals and developed an indigenous commerce and transportation to the fullest extent.

DRAINING THE LAKES OF THE VALLEY OF MEXICO

They were for modern man a constant menace during seasons of flood and have required enormous engineering works to keep them in bounds. The first of these, never of great value, was begun some 300 years ago, and exists at the present time as a gigantic ditch over 13 miles long, 197 feet deep, and 361 feet wide, dug by the patient labor of impressed Indians, and called the Tajo de Nochistongo. The latest undertaking is a canal connecting the three lakes and leading their waters out of the valley by a tunnel through the eastern mountains. This splendid piece of engineering, completed some years ago, effectually controls the height of the water in the lakes and prevents inundations.

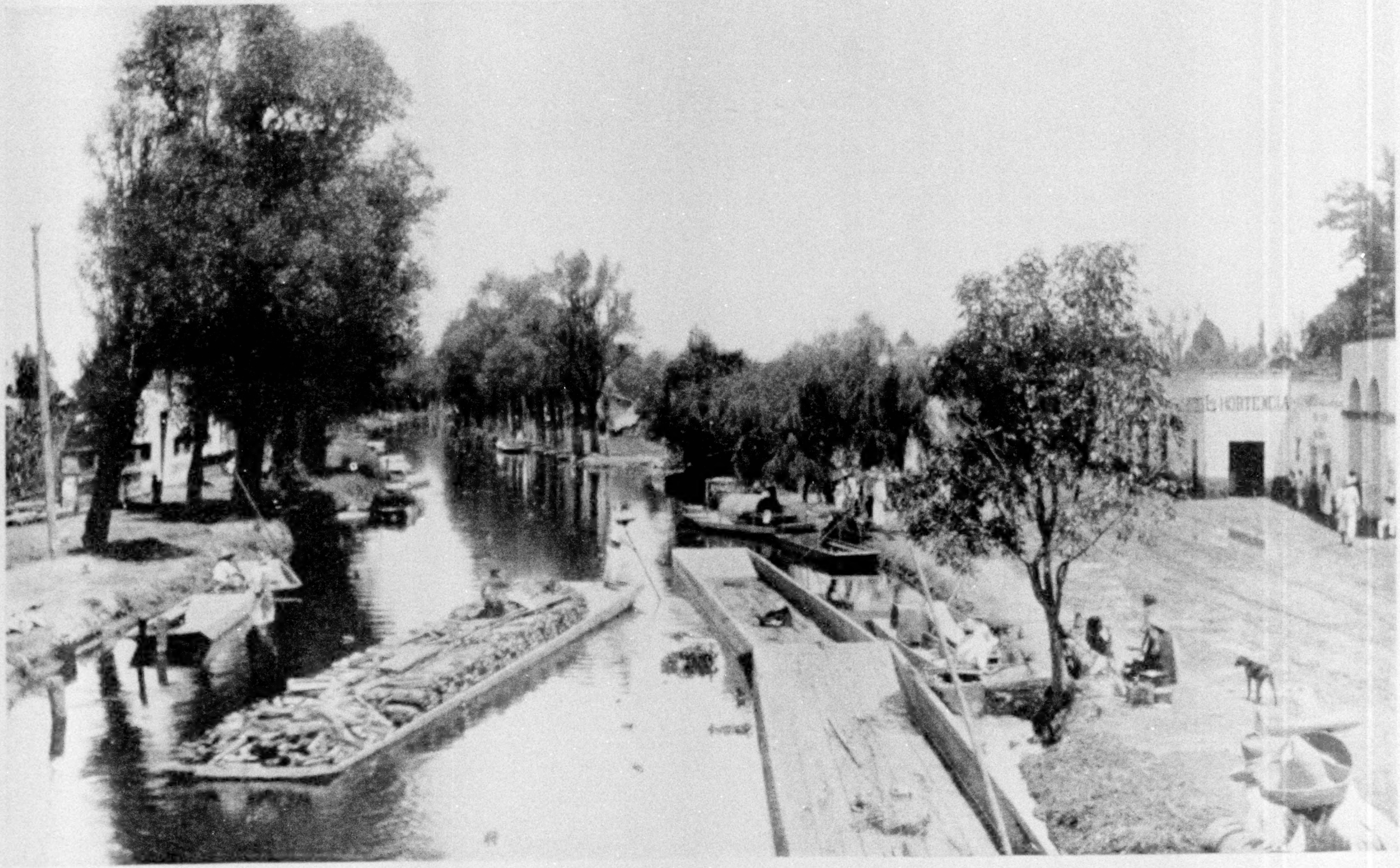
But long before Cortez came the Indians of the valley worked in the boggy lake lands and dug canals hither and thither—main canals between the lakes and to the great city of Tenochtitlan and smaller canals between their fields. Through this maze of waterways, then as now, they sent their boats and in the fens built their thatched houses. Historically, Cortez was the first European boat-builder in the New World, when of an imperious necessity he launched his brigantines, of quaint sixteenth century pattern, if one may believe the artists, in the reeking waters of Tezcoco at the spot near Huejutla, where there is now a bridge called Puente de los Bergantines, not far from the capital.

Pere Sahagun, the Franciscan, records that "the City of Mexico is like another Venice, and the people themselves are comparable to the Venetians in urbanity and savoir." This was written in the sixteenth century, but in the lapse of several hundred years the city's wonderful water environment has become dry ground, and the seeker for lake dwellers will have to look farther afield in the entrancing valley of the sky.

The way to the present Aztec Venice, which bears the name of Xochimilco, "in the field of flowers," is through one of these ancient canals—a prehistoric water road from Tenochtitlan to the capital and seat of one of the group of seven Aztec tribes which long ago came from remote Aztlan to the rich Valley of Mexico.

HARD TO GET A START

The life on the canal, vivid and picturesque, is as striking now as it was then; it may even be suspected that the change from that time to this has not been very great. It is hard to get a start to the land of the fens in more ways than one—the negotiations for passage in a barge with boatmen who display the characteristics of that tribe known the world over; and the conflicting claims also of all the costumes, incidents, shipping, and so forth, of the boiling, squirming kaleidoscopic canal and shore population on its multi-



NAVIGATION ON THE CANAL IN MEXICO CITY

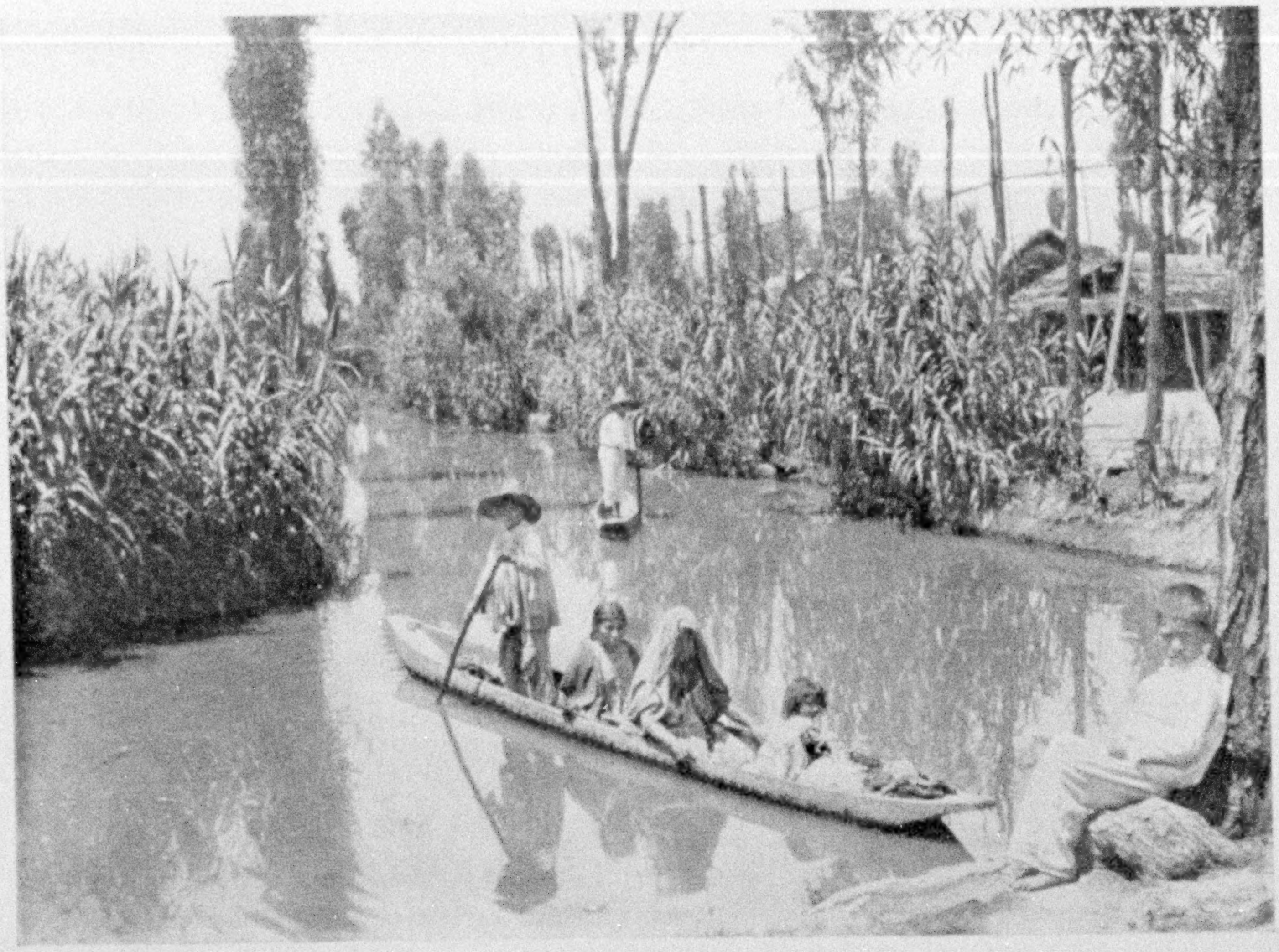
Once the wealth and beauty of Mexico dwelt along the boulevard bordering the National Canal; but its glory is departed, and a tawdry, odoriferous, peon-infested neighborhood it has become. When the annual flower festival at the little village of Santa Anita takes place, however, it becomes alive with color, and riotous good humor prevails.

IN THE VALLEY OF MEXICO

The Valley of Mexico is a semi-arid plateau, a mile and a half higher than Washington, D. C., and is surrounded in turn by high mountains, with only a few natural passages. Its greatest length is 71 miles and its greatest width 45 miles, although its average length is less than 50 miles and its average width less than 40. When the mountains which surround the valley were thrown up by volcanic cataclysms, they are supposed to have inclosed the valley entirely. During ages that followed the valley was a large lake, with numerous islands dotting its surface. In the day of the Aztecs the water had subsided, leaving many small lakes instead of the one large one. The coming of the Spaniard resulted in the cutting of a drainage canal through the mountain and the disappearance of most of these lakes.

LAKE XOCHIMILCO IN THE ENVIRONS OF MEXICO CITY

The lakes of the Valley of Mexico are noted for their beauty, and not the least of them is Xochimilco, which is connected with the capital by the Canal de la Viga



INDIANS BOATING ON ONE OF THE CANALS IN THE VALLEY OF MEXICO

If these Indians were to live "the sanitary life" as thoroughly as they do "the simple life," there would probably be more centenarians in Mexico than in any other country

farious quests bewilder the beholder and make him forget that he is on a journey to see the lake dwellers in their primitive homes. Tardily, then, the barga comes into the clear pool in front of the medieval toll-gate fortress, where all shipping must go under a low bridge and where the old-time toll collector, armed with a pike, could threaten the recalcitrant without much effort.

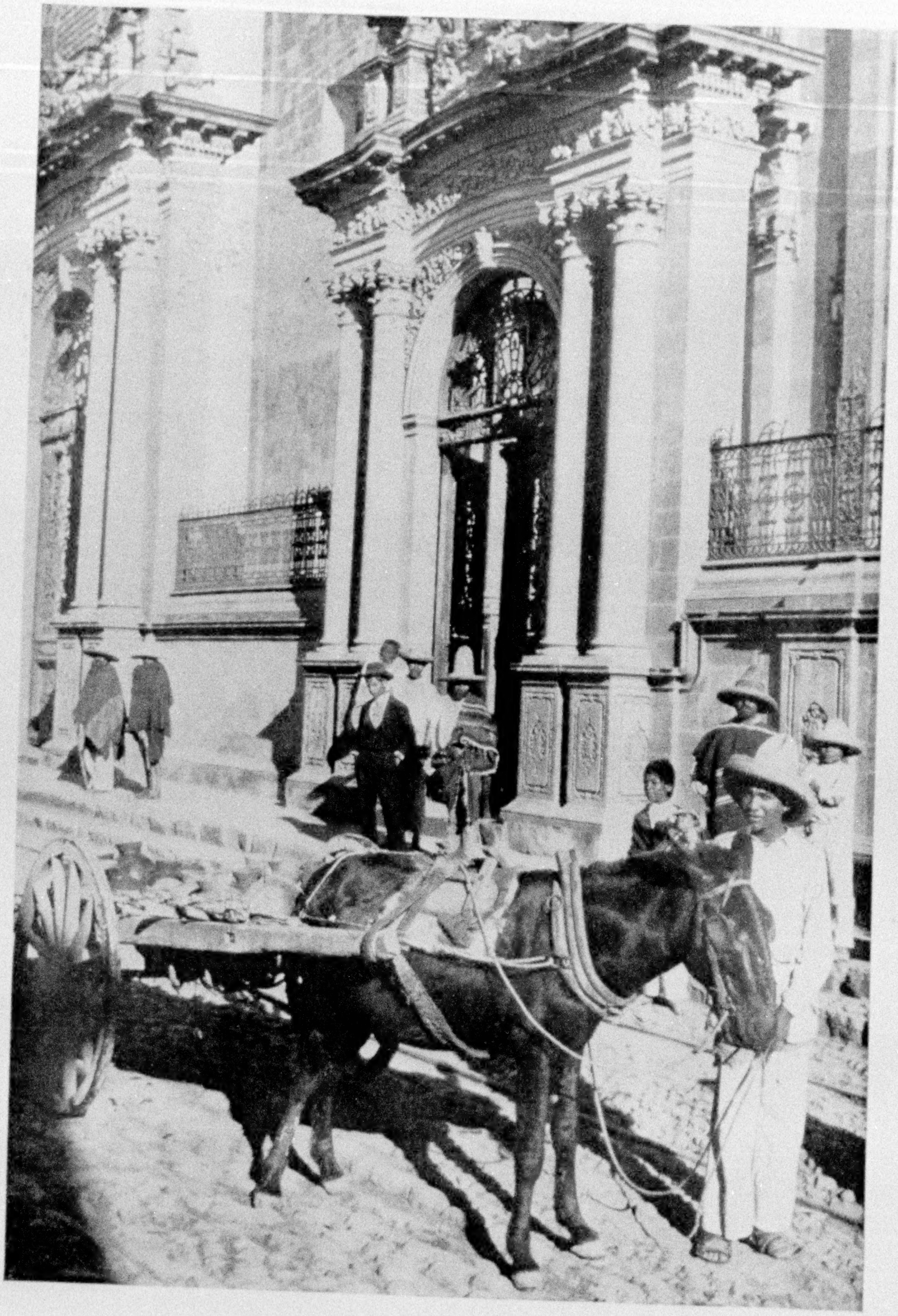
Beyond the gateway begin more vistas of a new world! On this canal, bordered with trees and spanned by quaint bridges, is a perfect stream of craft, from the slender dugout *chaloupe* to the square-bowed flat-boat, hurrying on with everything to feed, repair, and adorn the great city. Freight is of all descriptions, but one looks curiously on the small bundles of grass and other green forage for animal feed, the pulque barrels, vegetables, and flowers.

The Indian boatmen, clad in white cotton shirt and trousers, are working with a will, sometimes wading in the canal and drawing the heavy-laden boats after them; and alas! returning to their paradise, a woman piloting her husband who is the worse for pulque.

LIFE IN LAKE-LAND

There are pictures and pictures innumerable, full of human interest and checkered with a marvelous play of light, shadow, and reflection, as we pass by the gardens and openings of the larger and smaller canals. Here are embarkings and arrivals loading, unloading, and preparing to lay by for the night in a snug slip near where thatched houses play hide and seek in the luxuriant foliage; here a group of energetic washerwomen by the water margin, and there clouds of white or gaudy, much-belabored clothes on the bushes. No secrets are here; all goes on with the pulsing, urging force of labor freely and openly before men.

One remembers gardeners and gardens in the sunny flower and vegetable plots and children peeping out on the canal



A MEXICAN WATER WAGON

In Mexico City one can see almost every form of land transportation that civilization has to offer. Here is the peon with a load on his back. There one sees a sled used before wheels were invented, and across the way a solid-wheeled wagon of a design antedating the invention of spokes. Here is a carriage, there a street-car, and farther up the street a modern automobile carrying passengers to a railroad train about to start out of the city. Now and then a flying machine tries out its wings, and the gamut from the human burden-bearer to the most modern carrier is run.

Photograph by Harriet Chalmers Adams

AN AQUEDUCT THAT HAS STOOD SINCE THE DAYS OF THE CONQUISTADORES

Labor was cheap, even according to the Mexican standard, in the days of the Conquistadores, and the aqueducts that were built then were so well constructed that in many places they are still in perfect condition

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OLD CHURCH AT TLALPUJAHUA, MEXICO

Tlalpujahua is in the region inhabited by the Tarascan Indians, which lies due west of Mexico City. According to Prescott, the Tarascans had a Noah, called Trezpi, who escaped from a great flood in a boat laden with animals. Instead of a dove, Trezpi sent out a vulture first, and then a humming-bird, according to the legend. The methods of courtship in vogue among the Tarascans are peculiar. The lover goes to the spring where the object of his affection is accustomed to fill her water-jar. He holds her shawl until she accepts him, and then, with a stick, he breaks the jar which she holds on her head and gives her a betrothal baptism of water. These Indians once possessed the secret of tempering copper, an art now lost to the world.

ON THE CHINAMPAS CANAL, NEAR MEXICO CITY

In normal times life is easy in peon Mexico. Four centuries of penury have bred the love of luxury out of the natives' make-up, and they are now inured to hardships that would grind the very soul out of an American. What the average American wastes would seem a princely income to the Mexican peon.

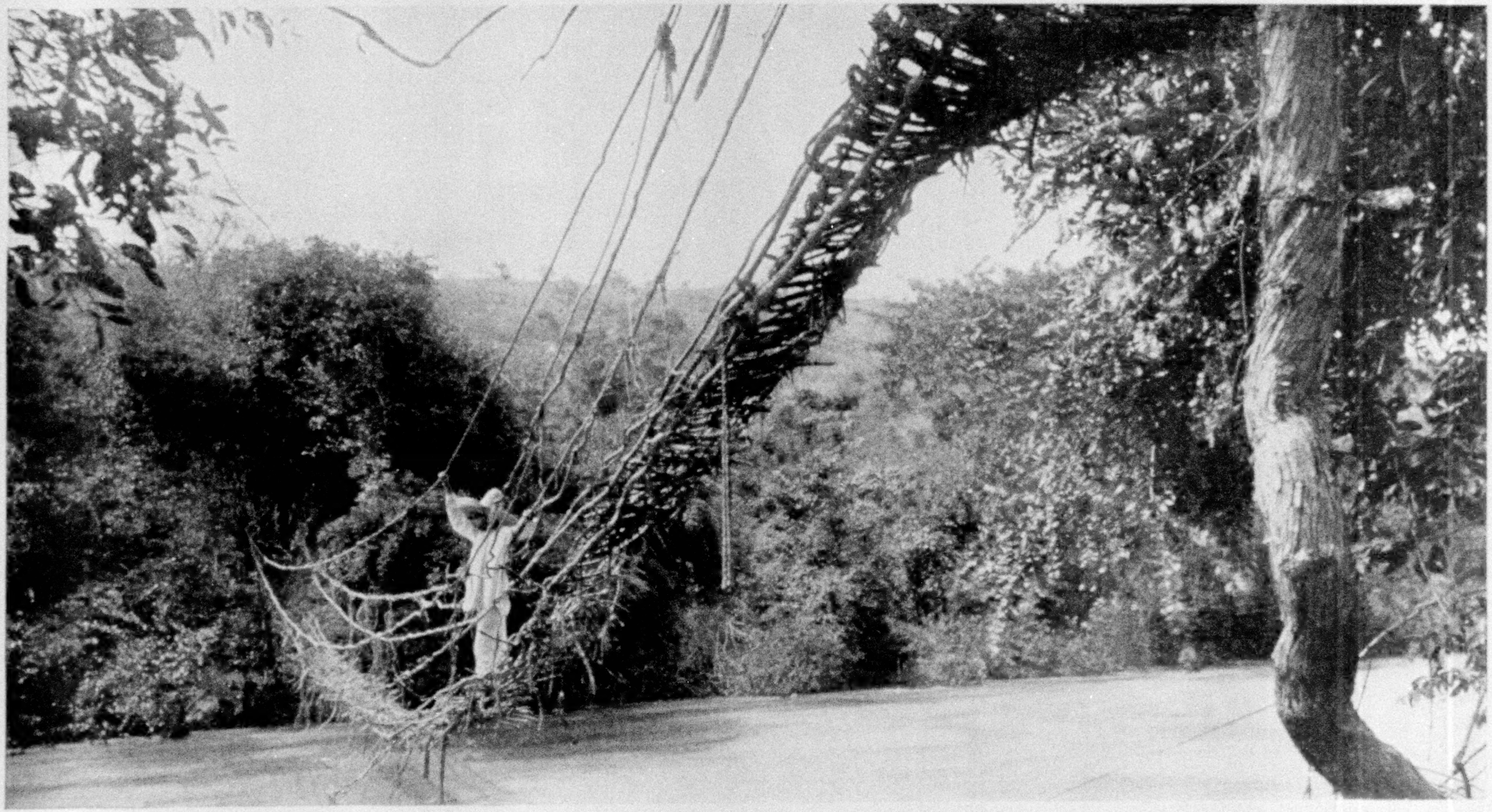
highway from under umbrageous trees. Flotsam and jetsam in the canal are vagrant bulbs and flowers of water hyacinth, a wicked, beautiful plant, whose reproductivity makes men work to keep it down, but here it has met its match and is made to be useful. Bridges there are, and most quaint, like that perfect arch of Ixticalco, under which white geese seem to float in the air.

One feels that this panorama should last forever, especially if he does not have to supply the labor of locomotion. Here at this landing at Xochimilco it must be realized that the mere first leaves of our experience, the loveliness of the country of the lake dwellers, are just unfolding.

HIDDEN BEAUTIES OF XOCHIMILCO

The town is really built on terra firma, as the seven churches, each well supplied with raucous bells, the streets of quaint houses, and the broad lava-paved prehistoric market-place, well attest; but the town disguises and hides away the life of the canals and gardens, and its attractions for the tourist are soon compassed.

We turn into a narrow lane leading away from the formal streets and emerge into an Indian dooryard, and within a



A VINE BRIDGE SPANNING A MEXICAN RIVER

In the art of making use of things provided by Nature-at-hand rather than by Industry-at-a-distance, the Mexican is something of a genius. He can build a bridge with no other tool than a machete, a wagon without a nail or a screw, and a house without a piece of iron in its construction. He does not need to go back to Nature—he has always been there.

THE COLLEGIATE CHURCH, WITH THE CHAPEL ON THE HILL IN THE BACKGROUND

This is the holiest shrine in Mexico. It stands on the site where the Virgin is reputed to have appeared to an Indian, Juan Diego, instructing him to take a message to the archbishop asking that a shrine be built there in her honor. After appearing to him several times, she finally commanded him to climb to the top of the hill, where the chapel now stands, but which had always been barren, and there to gather a bunch of roses to take to the archbishop. This he did; but when he unfolded his serape it was found to contain, so the account runs, a miraculously painted picture of the Virgin. This picture is now venerated by all Mexicans and occupies the center of the altar. The features and complexion are those of an Indian princess.

few feet of us is the main canal with its boats and floating water plants. The inhabitants of this little house group into which we have come as from another sphere are interested and friendly and ready to visit.

José, the active leader of the family, is going to take us to see the sights of the lake, and soon we are darting along other water streets bordered with spire-like willows, turning the corners and passing impressionistic gardens of cabbages, lettuce, pinks, and roses, until all sense of direction is lost. Soon the waterscapes become more extensive, and the barelegged Aztec boatmen bring up over Los Ojos, the springs, which they call the source of the lake, and hold in a veneration inculcated by ancient lore and customs. Really, the spot is most impressive.

When the Xochimilcans, in the days of their idolatry, worshiped their lacustrian spring, they placed therein a black stone image on the sparkling sand bottom of the crater-like fountain, where it was surrounded with plumy water plants, and to this deity offerings of copal, pottery, and other effects were made.

IDOLS AND SKULLS IN SPRING

Sahagun relates the sincere pleasure which he felt when he accomplished the raising of the god of the fountain from his mossy bed and substituted in the place a stone cross. This holy object can no longer be seen; but the litter of broken pottery now there is not ancient, and one suspects that the *costumbre* of oblations may have come down to modern times.

Several bleached skulls of horses were also seen in the spring—why no one can tell; but probably there is a folk belief or a horse worship begun with those war steeds of Cortez, to account for it. The

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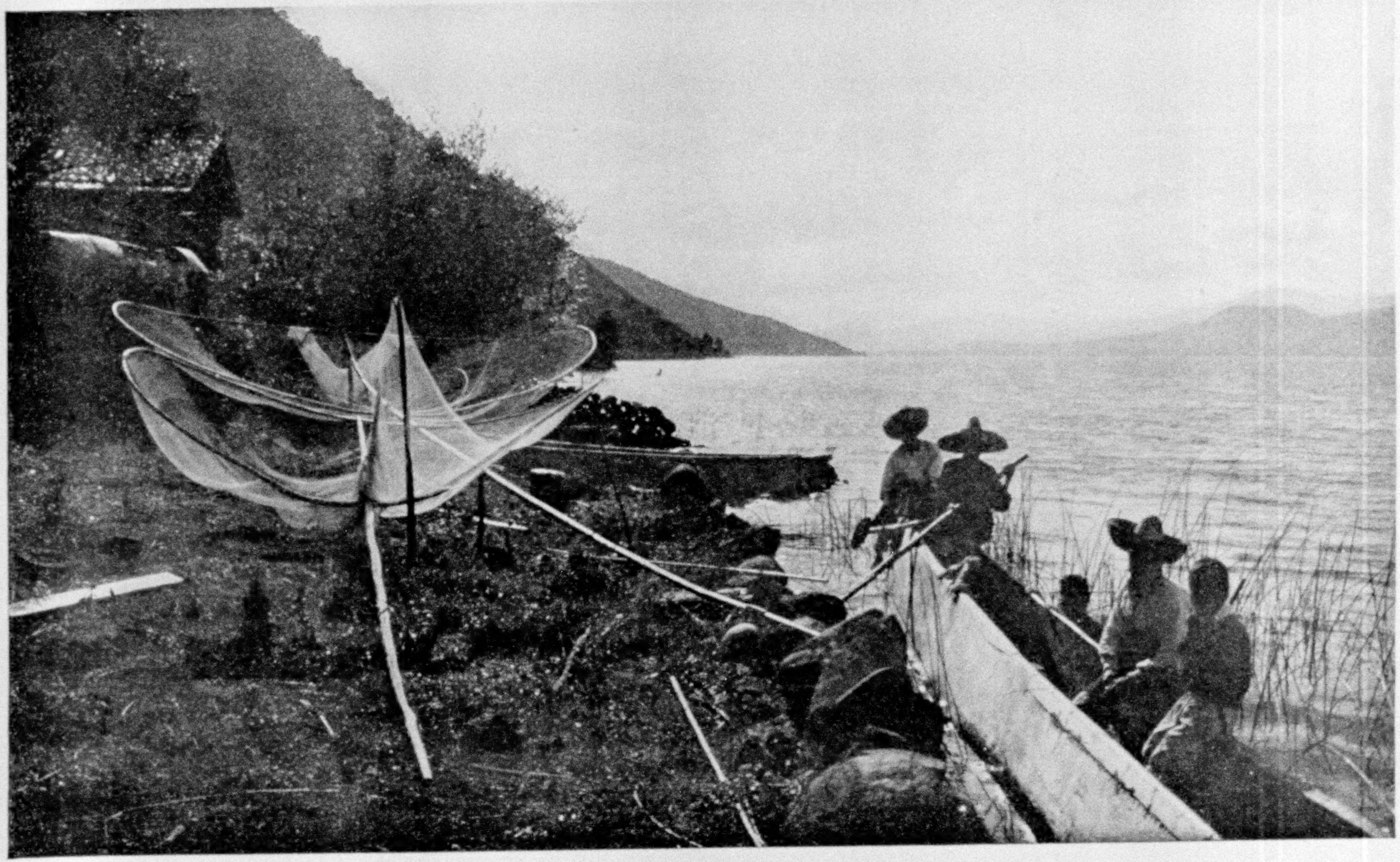
WATER-SELLERS AND THEIR DONKEYS ON THE SHORES OF LAKE CHAPALA

It is hard to realize, in a country where tap-water is universal in urban communities and well and springs everywhere in rural regions, what it means to live where you have to buy it at so much per jarful; and yet millions of Mexicans get their water via the "mule-back" route



LAKE PATZCUARO: MEXICO

The people who live along the shores and on the islands of Lake Patzcuaro live much to themselves, mingling with the outer world only when absolutely necessary. They use primitive log dugouts and make their living by fishing and hunting wild fowl. They are very fond of a species of salamander, the axolotl, commonly known to many as the water lizard. It has bushy external gills, similar to those which permanently characterize the mud puppy; its color is a mixed black and white. The flesh resembles that of the eel.

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THE WIVES AND CHILDREN OF THE MEXICAN SOLDIERS FOLLOWING THEM ABOUT

There is always to be found near a Mexican encampment a section where the wives and children live. In many of the Mexican battles women have taken part. This picture shows the women and children on the roof of one of the troop trains.

Photograph by Frank H. Probert

OFFERING DRAWN-WORK FOR SALE TO TOURISTS ON A MEXICAN RAILROAD

The Mexican Indian woman seems to have been born with a needle in her hand. Her drawn-work, for delicacy, beauty, and grace of design, is surpassed by none in the world. She can take the sheerest of handkerchief linen and draw out threads in a way that is the admiration and despair of many a cultured needlewoman.

springs have come out of their mystery in recent years and have been prosaically made to supply purer water to the City of Mexico.

These springs, as one sees them now, are bowls 100 feet in diameter and 30 to 40 feet deep, with water clear as crystal and cold, bursting up in the lake at the foot of the Sierra de Ajusco and fed by the snows. It is a remarkable experience to lunch there and drink the good water to the health of the spirit of the springs who has a choice assortment of broken crockery in his keeping. Views of snowy Popocatepetl are glimpsed up the vistas of the lanes between the floating gardens on the return and heighten the lovely reflections of the evening.

The houses of the amiable Xochimilcos are flimsy structures, but well-built and neat, and a visitor receives quite a favorable impression of the people. The pretty children make friends easily and load down the Americano with presents of flowers loved by the lake dwellers as they were by their Aztec ancestors. Any one who shows a liking for flowers has won the way to their affection.

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U. S. INFANTRY AT THE END OF A SIX-DAY HIKE IN MEXICO

A nation could not find a more inhospitable region in which to campaign than northern Mexico. Desolate, barren, the land sterile, the people poor, the landscape depressing in its somber monotony, there is little to lighten the heart or to lift a weight from the soul. Woe is written in the faces of its people and despair upon the face of the land.

Photograph by Capt. D. H. Scott, U. S. A.

A PAIR OF MEXICAN SUSPECTS

These sheep may be camp pets, but their days of preferment depend largely upon the ability of the commissary department to supply other stewing ingredients. The training of burros and sheep as pets serves to break the monotony of camp life during periods of inaction in Mexico. Hours are spent and patience tested while off duty in trying to teach young lambs old tricks.

In the slip of the canal are the boats owned by the Indians living in the little group of three or four houses belonging to our friends, who combine the vocations of boatmen, gardeners, and fishermen, the latter plying huge nets that seem oversized for the tiny quarry inhabiting the desolate lakes. The gardener works with the primitive tools of his ancestors, and the boatman takes extravagant pride in his dugout *chaloupe*, which is his ancient water vehicle, and also prizes his passenger canoe and freight barge, if his family is rich enough to own them.

GARDENS BUILT ON HYACINTH FOUNDATIONS

Without moving from José's dooryard, we may by good fortune see a neighbor constructing a "floating" garden, and we are carried back without effort several centuries into the past. From the canals the busy Aztecs throw great masses of water hyacinth upon the strip of bog to the thickness of a foot or more. The water hyacinth, which unfortunately does not fit into the ancient picture, is provided with large cellular floats—a natural provision for its dissemination, which has made it an obstruction to navigation in some of our southern rivers.

Upon this bed of floats they spread a layer of muck, dredged from the bottom of the canals. Perhaps before the plant floats have decayed, these gardens may drift away should the water rise. Even now on portions of the lake square miles of vegetation cover the surface like the "sudd" of the Nile, and the canal roads have to be staked at the sides to keep them from disappearing. Great drifts of microscopic vegetation cover the stagnant water of the open lakes with a mantle lovely in color, while the bottom is

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MOTOR-TRUCK TRAIN ARRIVING AT HEADQUARTERS CAMP NEAR NAMIQUIPA, MEXICO

The camps and depots of the punitive force in Mexico depend for supplies, ammunition, and food upon these trucks, which make their regular trips from the border to the various camps which mark the progress of the work in Mexico

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SPLENDID WORK OF OUR CAVALRY IN MEXICO

Troopers of the American cavalry arriving at camp after a fatiguing 47-mile journey over Mexican sands and through Mexican mountains

coral red from a weed that thrives in the water.

The term "floating gardens" was properly applied by the early historians of Mexico to masses of water weeds covered with a layer of rushes bearing a thin layer of soil, employed by the Mexicans at a period when the fluctuating waters of the lakes prevented the formation of permanent *chinampas*, and so in the New World the Indians repeated the famed gardens of the lakes of Cashmere.

FLOATING GARDENS REQUIRE IRRIGATION

From the abundance at José's and on every side it is evident that the Xochimilcans are expert gardeners and assiduous at their work. Most of their plants are started in seed beds, from which they are transplanted to the *chinampas*, and it is strange to see boat loads of corn sprouts brought to be planted in this manner. Curiously enough, these morass gardens sometimes require irrigation, which is accomplished by throwing on water from the canal with a wooden scoop.

While we sit in these peaceful surroundings, we cannot but reflect that in some ways it is hard to convince the ordinary observer that the modern is the ancient, and make him realize how much the life of this lake village is a vivid rendering of that of the prehistoric lake dwelling, whose cycle extended from the rude Stone Age through the Bronze Age to the Iron Age, and whose lost and cast-off objects sunk in the mud, form now a wondrous museum filled with the history of their progress—the romance of art, wars, and love otherwise unchronicled in an era when letters were not known. So the story was repeated in Florida, in Venezuela, in Ireland, in the Vale of Cashmere, in the East Indies, and in various parts of the world where tribes lived over the water for protection.

The Xochimilcos settled in prehistoric times at a place now called the South of the Valley, and later they extended their villages to the southern slope of Popocatepetl and along the mountains that connect the great volcano with the Sierra de Ajusco, which overhangs the lovely valley of Mexico.

MAKING UNFRIENDLY NATURE A SERVANT

It is said that when the Aztecs came to Anahuac they were not strong in number and were compelled to inhabit the morasses, because they had not power to dispossess the settled populations which had occupied the favored locations. In this seemingly inhospitable but, as we have seen, protecting and stimulating environment, the Aztecs gradually increased in population and culture and became powerful enough to sweep away the ancient civilizations that occupied the valley and make themselves masters of their heritage.

These movements had been accomplished when Cortez came on the scene. The vast floods, which were very destructive to the towns situated on land lying little distance above the water level, did not much incommode the hardy lake dwellers, whose gardens would float, if necessary, riding moored to stakes, until the waters fell.

The visitor to the homes of the Xochimilcos may thus reconstruct history that is replete with interest. He will see, as Cortez saw, a people lighter in color than any North American Indians, below medium stature, with muscular and well-knit bodies commendably clean through daily ablutions.

SORROW AT BIRTH; JOY AT DEATH

It cannot be said that the Xochimilcan man has an open and ingenuous countenance, but it shows force of character and lights up quickly in response to kindness and recognition. The young women have round, often ruddy, but rather expressionless faces; the children are pretty, and the older women are better preserved than the women of the Pueblos of the southwestern United States. Both sexes work hard, and where there is such uniformity of poverty the struggle for existence makes life a serious matter and engraves deep lines in the faces of the breadwinners.

Thus a birth is heralded with mourning and a death with rejoicing. Their music is monotonous and disagreeable to the educated ear, and their amusements seem to be few; but, given advantages, these people show skill in the arts, and as

musicians they have made the Mexican bands known all over the world. They are gifted, besides, with a singular tenacity of purpose and mentally are capable of receiving a high education, which we may hope will be accepted with moderation.

What will be their future when their swamps are drained and their old lake-dweller life merged into the humdrum of farmers? If by good fortune they are kept from the deadly effects of alcohol, that chief moloch of the Mexican Indian, no doubt they will live happily on the dry lake bottom as before in the days of Montezuma.

THE LATEST MAP OF MEXICO

Especially Compiled for the Members of the National Geographic Society

THE attention of the members of the Society is called to the map of Mexico presented in this number, 20" x 29" in size, and printed in four colors. Nothing has been left undone to make this the most accurate, the most detailed, and yet the most easily read map of that country ever compiled, embracing the very latest information obtainable from authoritative sources. It not only shows all of the transportation lines, but every station of even passing interest, as well as the villages and towns off of the beaten paths.

The map is drawn on a scale of 67.6 miles to the inch and has an insert, drawn to a scale of 33.8 miles to the inch, showing the great region embraced between Tampico and Vera Cruz on the east and Morelia, Guanajuato, and San Luis Potosi on the west. There is also a very helpful drawing which shows the size of Massachusetts, Connecticut, Rhode Island, and eastern New York in comparison with Mexico.

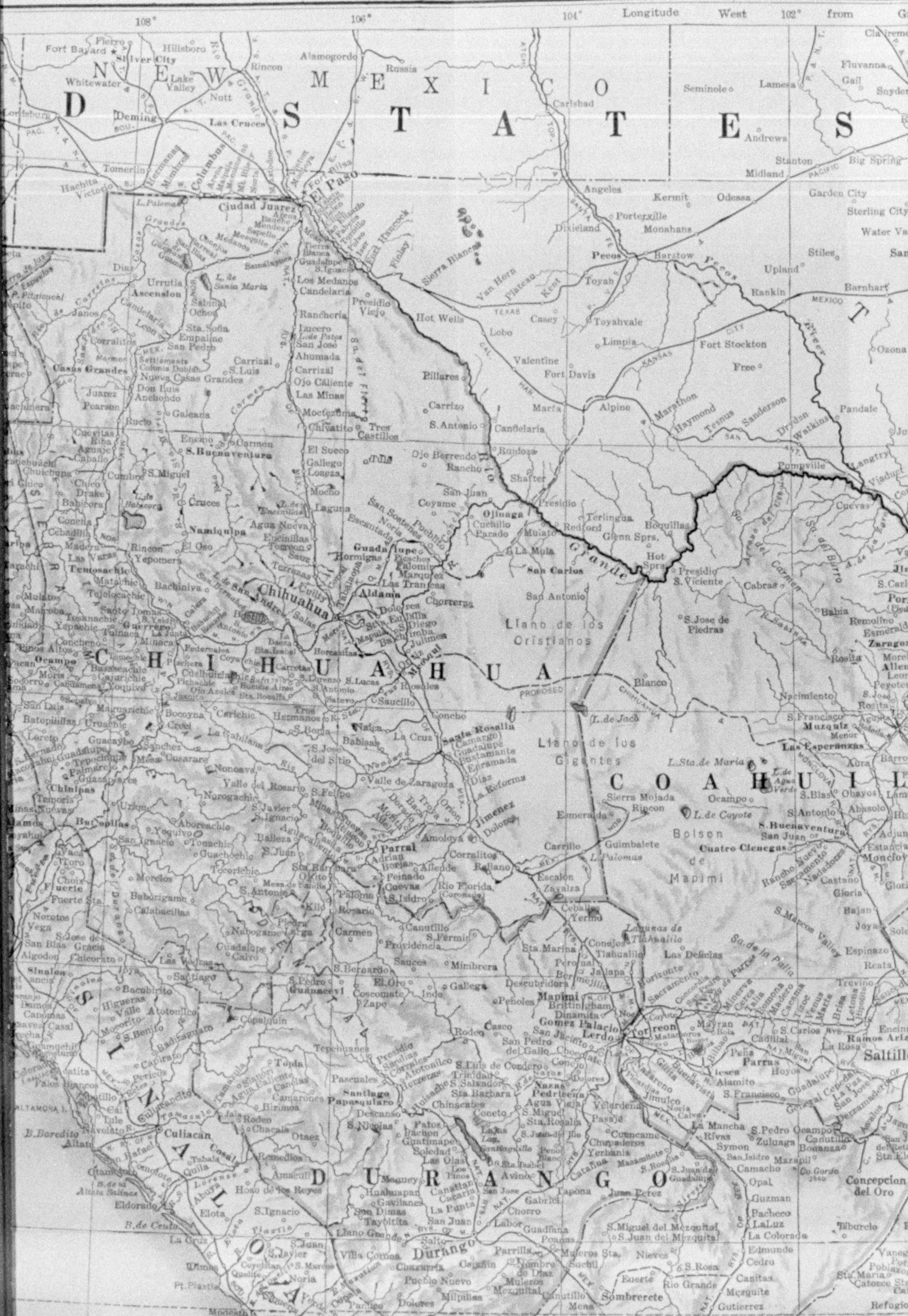
In addition to this, there is a small physical map showing elevations in Mexico. It gives at a glance a graphic portrayal of the physical appearance of the country, there being one color representing all territory below 1,000 feet, another elevations from 1,000 to 5,000 feet, a third showing that part of the country lying between the 5,000 feet and the 8,000 feet contour, and a fourth showing all territory lying above 8,000 feet.

Particular attention is called to the legibility of the map. The ordinary map as full of detail as this one is difficult to read, but our cartographer in this instance has succeeded in gaining in detail without losing in legibility—a rare combination in map-making. A study of Mexico from the map-maker's viewpoint reveals many interesting facts. Although that country is only one-fourth as large as the United States, one can travel in a straight line as far as from National City, California, to Sitka, Alaska, or from Chicago to Nicaraugua, or from Richmond, Virginia, to Colon, Panama, without ever setting foot on other than Mexican soil. Likewise the distance between National City, California, and the mouth of the Rio Grande is greater than that from Baltimore, Maryland, to Galveston, Texas; also, it is farther from extreme northwestern Mexico to the extreme southeastern shore of that country than it is from St. Louis, Missouri, to San Juan, Porto Rico.

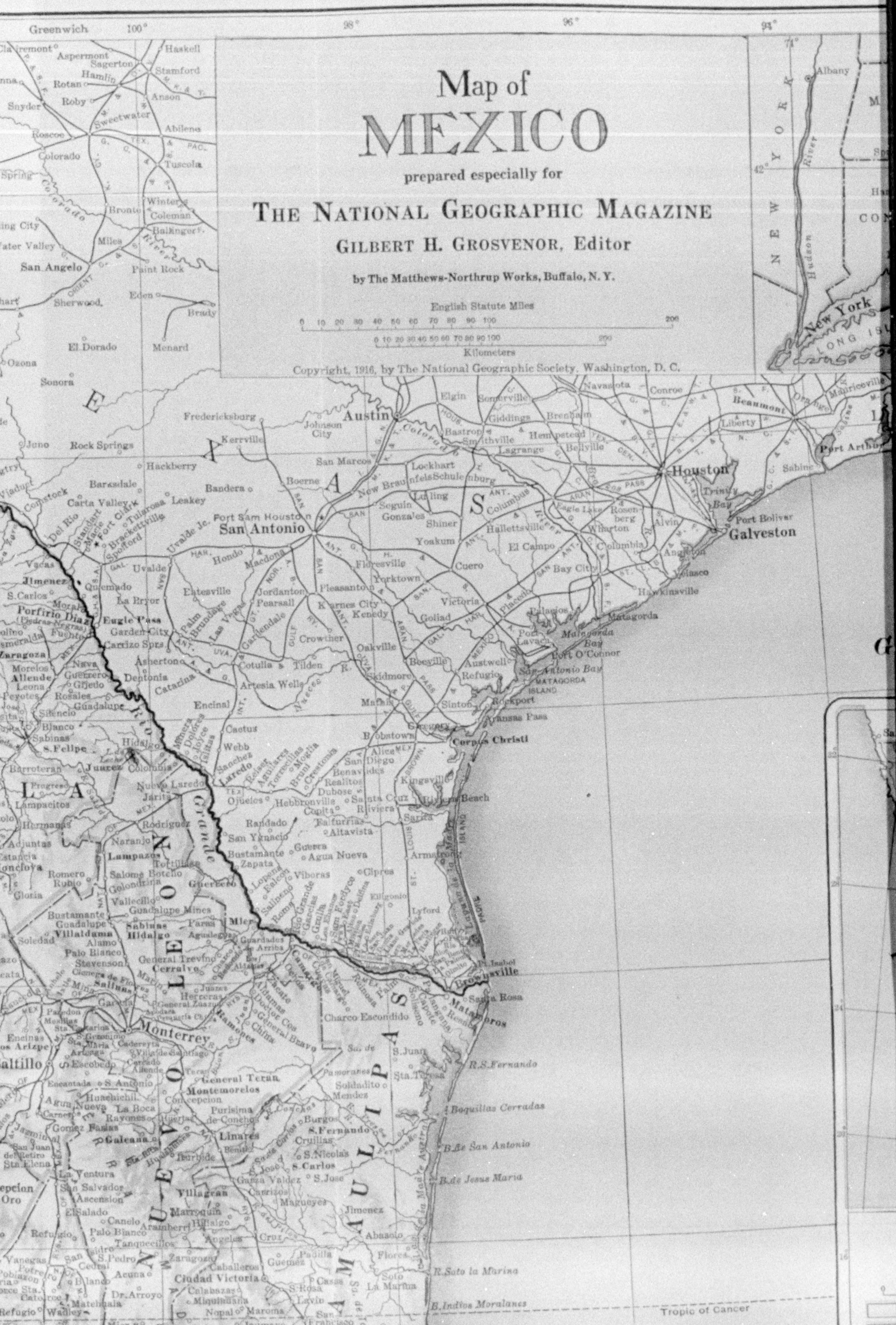
Extra copies of this map may be had for 50 cents each. Copies mounted on linen at $1 each, and on rollers $1.50 postpaid in the United States.

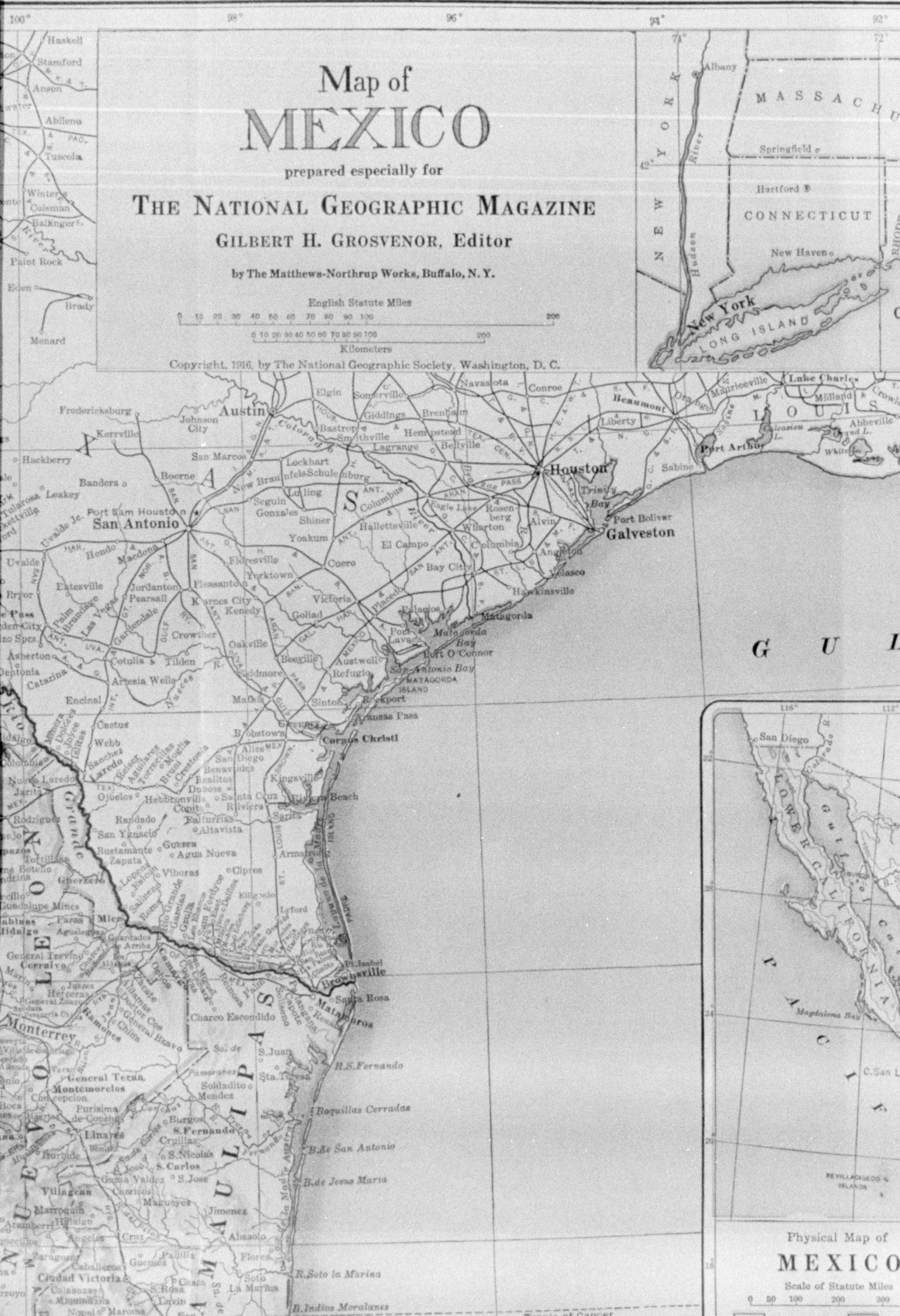
UNITED
ARIZONA
CALIFORNIA
SONORA
LOWER CALIFORNIA
BAJA
GULF OF CALIFORNIA
PACIFIC OCEAN
Sebastian Vizcaino Bay
Magdalena Bay
Tropic of Cancer
San Diego
Tia Juana
Mexicali
Yuma
Tucson
Nogales
Hermosillo
Guaymas
Ensenada de Todos Santos
Sta. Rosalia
Loreto
La Paz
Todos Santos
Santa Clara Desert
Sierra Santa Clara
116°
114°
112°
32°
30°
28°
26°
24°

110°
108°
106°
104°
Longitude West
NEW MEXICO
UNITED STATES
CHIHUAHUA
SINALOA
DURANGO
COAH
Fort Bayard
Silver City
Hillsboro
Alamogordo
Rincon
Russia
Whitewater
Lake Valley
Nutt
Carlsbad
Seminole
Lordsburg
Bowie
Deming
Las Cruces
Cochise
Benson
Tombstone
Kelton
Bisbee
Columbus
Tomerlin
Hachita
Victorio
El Paso
Ciudad Juarez
Angeles
Kermit
Odessa
Porterville
Dixieland
Monahans
Douglas
Agua Prieta
Pecos
Barstow
Toyah
Van Horn
Sierra Blanca
Finlay
Fort Hancock
Los Medanos
Candelaria
Presidio Viejo
Hot Wells
Lobo
Casey
Toyahvale
Limpia
Fort Stockton
Valentine
Fort Davis
Marfa
Alpine
Marathon
Haymond
Ascension
Urrutia
Janos
Rancheria
Lucero
San Jose
Ahumada
Carrizal
Ojo Caliente
Las Minas
Nacozari
Casas Grandes
Nueva Casas Grandes
Galeana
Moctezuma
Chivatito
Tres Castillos
Pillares
Carrizo
S. Antonio
Candelaria
Ruidosa
Shafter
Presidio
Ojinaga
S. Buenaventura
El Sueco
Gallego
Laguna
Terlingua
Boquillas
Namiquipa
Cruces
Agua Nueva
Encinillas
Guadalupe
Hormigas
San Carlos
Chihuahua
Aldama
Llano de los Cristianos
Hot Sprs.
Presidio
S. Vicente
S. Jose de Piedras
Guerrero
Ocampo
Tres Hermanos
Santa Rosalia
Llano de los Gigantes
L. de Jaco
Sierra Mojada
Esmeralda
Jimenez
Parral
Bolson de Mapimi
Cuatro Cienegas
Escalon
Yermo
Mapimi
Gomez Palacio
Lerdo
Torreon
Sinaloa
Alamos
Topolobampo
Culiacan
Santiago Papasquiaro
Durango
Sombrerete
Tepehuanes
Guanacevi
Cosala
Indé
S. Juan del Mezquital
B. de Ceuta
Altata



108°
106°
104°
Longitude West 102° from
NEW MEXICO
UNITED STATES
TEXAS
CHIHUAHUA
COAHUILA
DURANGO
SINALOA
El Paso
Ciudad Juarez
Las Cruces
Deming
Silver City
Fort Bayard
Hillsboro
Alamogordo
Carlsbad
Pecos
Barstow
Monahans
Odessa
Midland
Big Spring
Andrews
Seminole
Lamesa
Fort Stockton
Alpine
Marathon
Marfa
Valentine
Fort Davis
Sanderson
Langtry
Presidio
Ojinaga
Terlingua
Boquillas
Chihuahua
Casas Grandes
Nueva Casas Grandes
Ascension
Namiquipa
Guerrero
Aldama
Santa Rosalia
Jimenez
Parral
Llano de los Cristianos
Llano de los Gigantes
Bolson de Mapimi
Sierra Mojada
Cuatro Cienegas
Monclova
Muzquiz
Las Esperanzas
Torreon
Lerdo
Gomez Palacio
Mapimi
Parras
Saltillo
Durango
Santiago Papasquiaro
Culiacan
Cosala
Concepcion del Oro
Sombrerete
Rio Grande
Rio Grande


Map of
MEXICO
prepared especially for
THE NATIONAL GEOGRAPHIC MAGAZINE
GILBERT H. GROSVENOR, Editor
by The Matthews-Northrup Works, Buffalo, N. Y.
English Statute Miles
Kilometers
Copyright, 1916, by The National Geographic Society, Washington, D. C.
Greenwich
Austin
San Antonio
Houston
Galveston
Corpus Christi
Brownsville
Monterrey
Saltillo
Laredo
Eagle Pass
Matamoros
Ciudad Victoria
Tropic of Cancer
New York
Albany


Map of
MEXICO
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THE NATIONAL GEOGRAPHIC MAGAZINE
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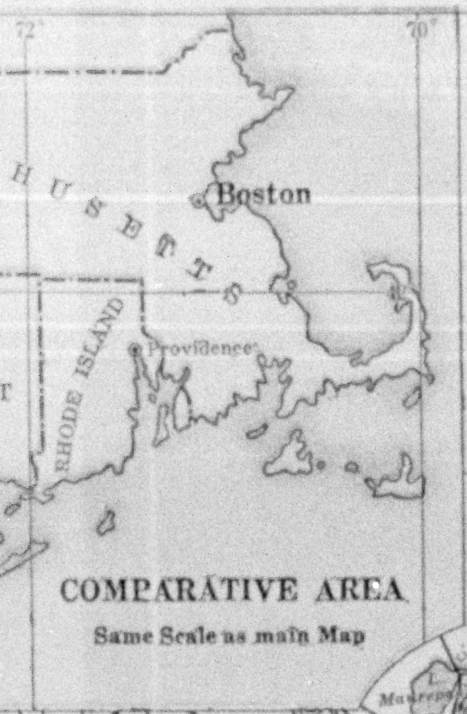
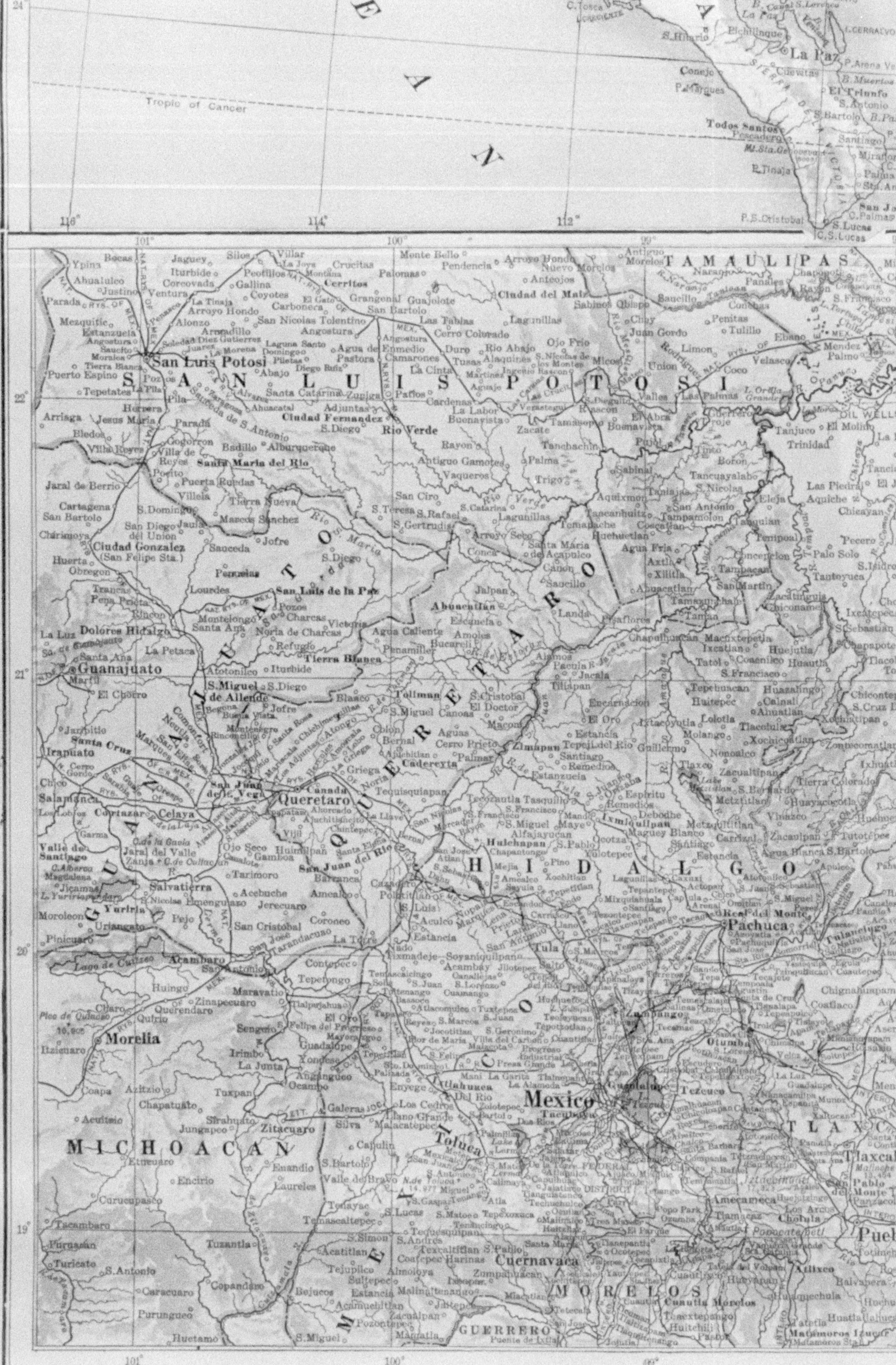
by The Matthews-Northrup Works, Buffalo, N.Y.
English Statute Miles
Kilometers
Copyright, 1916, by The National Geographic Society, Washington, D. C.
NEW YORK
MASSACHU
CONNECTICUT
Albany
Springfield
Hartford
New Haven
New York
LONG ISLAND
Hudson River
TEXAS
LOUIS
Austin
San Antonio
Houston
Galveston
Beaumont
Port Arthur
Corpus Christi
Brownsville
Matamoros
Monterrey
Laredo
Victoria
Matagorda Bay
San Antonio Bay
Rio Grande
NUEVO LEON
TAMAULIPAS
GULF
Physical Map of
MEXICO
Scale of Statute Miles
LOWER CALIFORNIA
PACIFIC
San Diego
Magdalena Bay

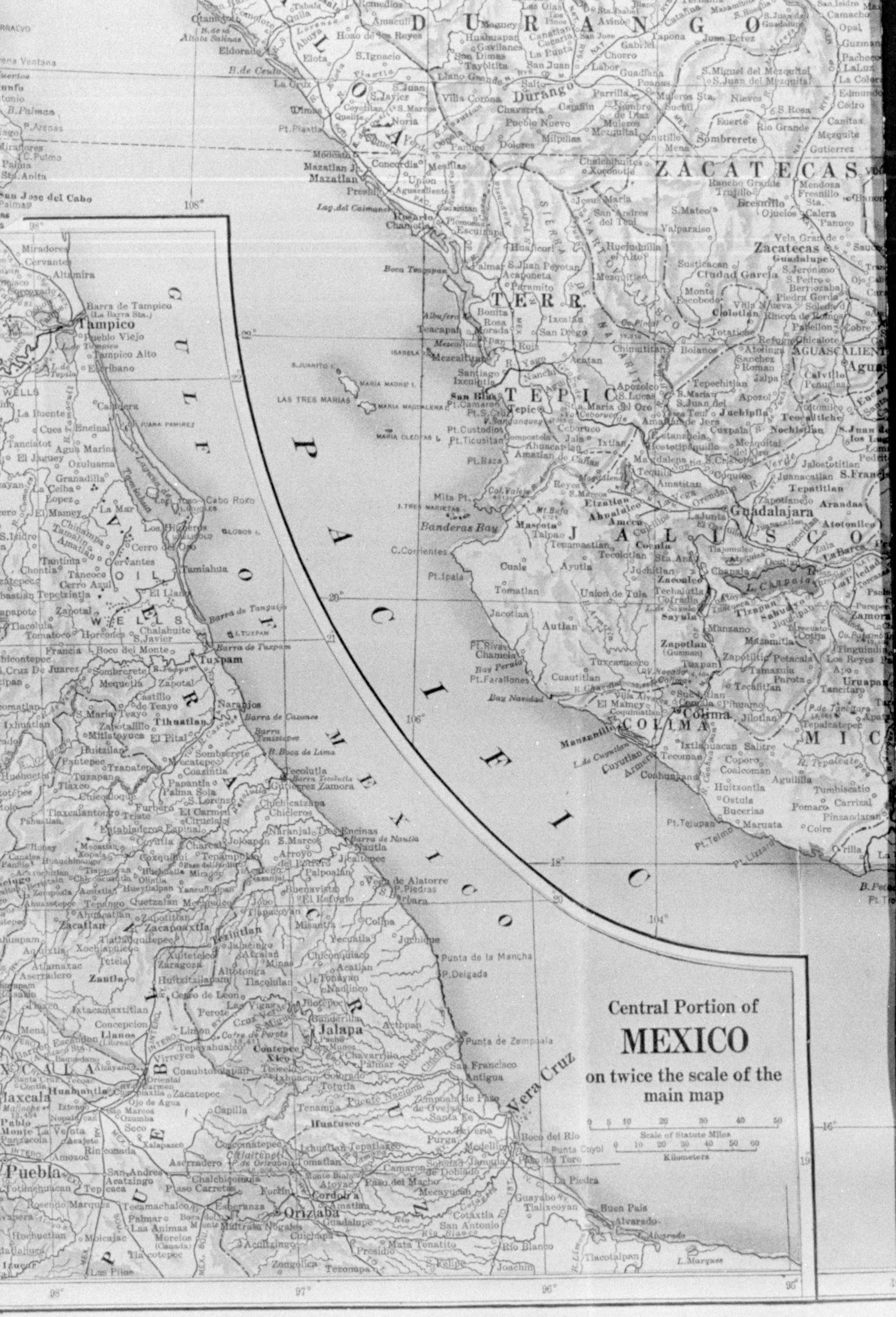
DISTANCES IN STATUTE MILES

Places in United States		Miles	Places in Mexico		Miles
Boston to New York	(by rail)	217	Mexico City to Vera Cruz	(by rail)	264
New York to Chicago	"	912	Mexico City to El Paso	"	1225
Chicago to El Paso	"	1465	Mexico City to Laredo	"	801
Chicago to San Francisco	"	2274	Progreso to Vera Cruz	(by water)	465
Denver to El Paso	"	783	Vera Cruz to Tampico	"	275
St. Louis to Laredo	"	1074	Tampico to Matamoros	"	300
New York to Vera Cruz	(by water)	2213	El Paso to Chihuahua	(by rail)	226
Galveston to Tampico	"	540	El Paso to Torreon	"	517
Brownsville to El Paso (along Rio Grande)		890	Laredo to Torreon	"	411
San Francisco to El Paso	(by rail)	1287	Torreon to Mexico City	"	708





Tropic of Cancer
La Paz
Todos Santos
S. Lucas
TAMAULIPAS
SAN LUIS POTOSI
San Luis Potosi
Ciudad Fernandez
Rio Verde
Ciudad del Maiz
GUANAJUATO
Guanajuato
Dolores Hidalgo
San Luis de la Paz
S. Miguel de Allende
Irapuato
Celaya
Salamanca
QUERETARO
Queretaro
San Juan del Rio
HIDALGO
Pachuca
Tula
Zimapan
MEXICO
Mexico
Toluca
Cuernavaca
MORELOS
GUERRERO
MICHOACAN
Morelia
Acambaro
Lago de Cuitzeo
Zitacuaro
TLAXCALA
Tlaxcala
Puebla
Cholula
Atlixco
Amecameca
Popocatepetl
FEDERAL DISTRICT
Texcoco
Guadalupe
Tacubaya
Lerma
Zumpango
Otumba


Central Portion of
MEXICO
on twice the scale of the main map
Scale of Statute Miles
0 5 10 20 30 40 50
Kilometers
0 10 20 30 40 50 60
DURANGO
ZACATECAS
TERR.
TEPIC
JALISCO
COLIMA
AGUASCALIENTES
GULF OF MEXICO
PACIFIC OCEAN
VERA CRUZ
PUEBLA
Tampico
Tuxpam
Mazatlan
Durango
Zacatecas
Tepic
Guadalajara
Colima
Manzanillo
Jalapa
Vera Cruz
Orizaba
Puebla
Tlaxcala
Banderas Bay
L. Chapala
Las Tres Marias
108°
106°
104°
98°
97°
96°
95°
22°
21°
20°
19°
18°
16°

Central Portion of
MEXICO
on twice the scale of the main map
Scale of Statute Miles
0 5 10 20 30 40 50
Kilometers
0 10 20 30 40 50 60
DURANGO
ZACATECAS
TERR. TEPIC
JALISCO
COLIMA
GULF OF MEXICO
PACIFIC
VERA CRUZ
PUEBLA
OIL WELLS
Durango
Mazatlan
Zacatecas
Tepic
Guadalajara
Colima
Manzanillo
Tampico
Tuxpam
Jalapa
Vera Cruz
Orizaba
Puebla
Tlaxcala
Banderas Bay
L. Chapala
Las Tres Marias
San Jose del Cabo
108°
106°
104°
98°
97°
96°
95°
22°
20°
18°
16°

SAN LUIS POTOSI
San Luis Potosi
GUANAJUATO
Guanajuato
QUERETARO
Queretaro
HIDALGO
Pachuca
MICHOACAN
Morelia
MORELOS
Cuernavaca
Mexico
Toluca
TLAXCALA
Tlaxcala
Puebla
Orizaba
Cordoba
Jalapa
Vera Cruz
Tampico
Tuxpam
Aguascalientes
Oaxaca
Chilpancingo
Acapulco
Iguala
Taxco
Tehuantepec
Tula
Ciudad Victoria
Tropic of Cancer
B.de Jesus Maria
R.Soto la Marina
B.Indios Moralanes
B.del Tordo
B.de Trinidad
B.Petacalco
Pt.Troncones
Pt.Marques
Pt.Angeles
Gulf
O
C
E
A
N
102°
100°
98°
96°
16°

Physical Map of
MEXICO
Scale of Statute Miles
0 50 100 200 300
0' to 1000'
1000' to 5000'
REVILLAGIGEDO ISLANDS
Tropic of Cancer
G U L F
B A Y O F C A M
Gulf of Tehuantepec
ISTHMUS OF TEHUANTEPEC
O A X A C A
HIDALGO
MORELOS
Tampico
Tuxpam
Vera Cruz
Jalapa
Orizaba
Puebla
Mexico
Toluca
Pachuca
Tula
Cuernavaca
Chilpancingo
Oaxaca
Tlacolula
Tehuantepec
Juchitan
Puerto Mexico
Ciudad Victoria
Tula
Tlaxcala
Cordoba
S. Andres Tuxtla
Acayucan
Minatitlan
Huajuapan de Leon
Ometepec
Juquila
Pto Angel
Pt. Angeles
Tonala
Cardenas
B. del Tordo
R. Soto la Marina
B. Indios Moralanes
Cabo Roxo
Lobos I.
Pt. de Zempoala
Naolinco
Actopan
Nautla
Tecolutla
Papantla
Zacapoaxtla
Teziutlan
Altotonga
Huatusco
Tehuacan
Tuxtepec
Cosamaloapan
Tlacotalpan
Alvarado
Catemaco
Tlaxiaco
Nochixtlan
Ejutla
Miahuatlan
Pochutla
Tixtla
Chilapa
Iguala
Taxco
Huitzuco
Acatlan
Matamoros
100°
98°
96°
94°
116°
112°

Mexico
Vera Cruz
Yucatan
Sierra Madre del Sur
Isthmus of Tehuantepec
Gulf of Tehuantepec
Gulf of Honduras
GUATEMALA
HONDURAS
O C E A N
5000' to 8000'
Over 8000 ft.
Miles
Longitude West 100° from Greenwich
O F M E X I C O
Bank of Campeche
ALACRAN REEF
THE TRIANGLES
CAYO ARCAS
Progreso
Merida
Hunucma
Celestum
Motul
Izamal
Tekanto
Temax
Tizimin
Panaba
S. Fernando
Loche
Calotmul
Espita
Citas
Tinum
Uayma
Valladolid
Chemax
Sotuta
Chichen Itza
Tixcacalcupul
Chichimila
Peto
Tzucacab
Tekax
Ticul
Tepich
Chikinconot
S. Antonio
Hecelchakan
Pomuch
Tenabo
Campeche
P. Morros
P. Seiba
Seybaplaya
Champoton
Sabancuy
Aguada
Carmen
Xicalango
Laguna de Terminos
Lerma
Hopelchen
Iturbide
Sihochac
Bolonchen
Pich
Cibalchen
Mesapich
Pustunich
Sahkabchen
Thubusil
Chiebul
Tancach
Pital
Mamantel
Concepcion
Candelaria
S. Isabel
S. Pedro
S. Felipe
Esperanza
Labpak
Babachano
C A M P E C H E
Y U C A T A N
TERR.
QUINTANA ROO
Santa Cruz de Bravo
Chansantacruz
Chunhubub
Lochha
L. de Bacalar
Bacalar
Payo Obispo
Corosal
L. Tuci
Tela
Conot
Vigia
Chobo
Placer
Majugalo
Caliban
Xcalax
Boca de Bacalar Chico
AMBERGRIS CAY
Batchiel
Tuloom
Pahna
La Maroma
Nohku
S. Maria
Pole
Labeah
Kantunil-Kin
Boca de Holkoben
C. Catoche
I. CONTOY
I. BLANCA
I. MUJERES
I. CANCUM
I. COZUMEL
S. Miguel
I. SULIMAN
Ascencion
P. Fupar
B. Espiritus Santo
P. Herrero
GREAT CAY (GRAN CAYO)
BRITISH HONDURAS
Belize
Stann Creek
TURNEFFE ISLAND
Punta Gorda
Gulf of Honduras
Puerto Cortez
Livingston
L. Izabal
Puerto Barrios
S. Pedro
Progreso
Pimienta
Zacapa
R. Chamelecon
R. Ulua
G U A T E M A L A
L. S. Andres de Peten
Flores
R. Usumacinta
R. San Pedro
R. Pasion
R. Polochic
Pancajche
R. Panzos
C E N T R A L   A M E R I C A
H O N D U R A S
C A R I B B E A N   S E A
Frontera
San Juan Bautista
Jonuta
Balancan
Tenosique
Montecristo
Macuspana
Palenque
Teapa
Tacotalpa
Jalapa
Yajalon
Chilon
Simojovel
Ocosingo
Oxchuc
Huistan
San Cristobal
Chamula
Chiapa
Teopisca
Amatenango
Comitan
Zapaluta
Las Margaritas
S. Nicolas
Constancia
C H I A P A S
S. Bartolome
Socoltenango
Pinola
La Concordia
Chicomuselo
Amatenango
Motozintla
Tapachula
Union Juarez
Tuxtla Chico
Ayutla
Ocos
R. Suchiate
C. de Ixbul
22°
20°
18°
16°
92°
90°
88°

AN AMERICAN GIBRALTAR

Notes on the Danish West Indies

THE negotiation of a treaty between Denmark and the United States, under which Denmark is to sell to this country her holdings in the West Indies, at once brings into the relief of public interest a little group of islands on the northeastern rim of the Caribbean Sea. Not only because of their eventful history are these islands worthy of consideration, but because they have figured in many diplomatic negotiations, and their ultimate ownership may have an important bearing on the international relations of the future.

That this group of about fifty islands, only three of which are big enough to have a name on any but hydrographic charts and local maps, and the biggest of which one could walk around in nine hours, seem important to our government may be judged by the price it proposes to pay for them. We gave less than 2 cents an acre for Alaska, less than 3 cents an acre for California, Nevada, Colorado, and Utah, less than 14 cents an acre for Florida, and under 27 cents an acre for the Philippines. Even for the Canal Zone we paid but $35.83 per acre. Yet at $25,000,000 for the group we are offering Denmark more than $295 per acre for her holdings.

THE ISLANDS MEASURED

Authorities have disagreed as to the area of the islands. Even as to the three main islands—St. Thomas, St. John, and St. Croix—there is no agreement upon the question of area. In order to get a definite statement as to their size, planimeter measurements of them were made on hydrographic charts in the offices of the National Geographic Society, and they show that St. Thomas is 28.25 square miles in area, St. Croix 84.25 square miles, and St. John 19.97 square miles, making a total of 132.47 square miles for the three islands. Some authorities give the area as 138 square miles and others as 142 square miles.

From the standpoint of the United States, St. Thomas is the most important of the group of islands. This importance arises from the fact that the harbor on the south side of the island, on whose borders the town of Charlotte Amalie is located, is one of the finest in all tropical America. From the days of the buccaneers its strategic advantage has been realized, for when the Spanish Main was the happy hunting ground of the gentlemen of the Black Flag this harbor was their headquarters. Behind its outer hills the pirate craft found shelter from the open sea, and were well screened from the sight of passing ships until the moment came to pounce down upon them. In more recent times it has played the rôle of safe harbor for the thousands of vessels bound from Europe to Panama and surrounding territory, or *vice versa*. With a free port, where repairs, ships' stores, and coal might be had, upon which there had been no levy of tariff duties, the shipping world found the harbor of Charlotte Amalie an attractive way station on most of its Caribbean routes.

A RUINED AGRICULTURE

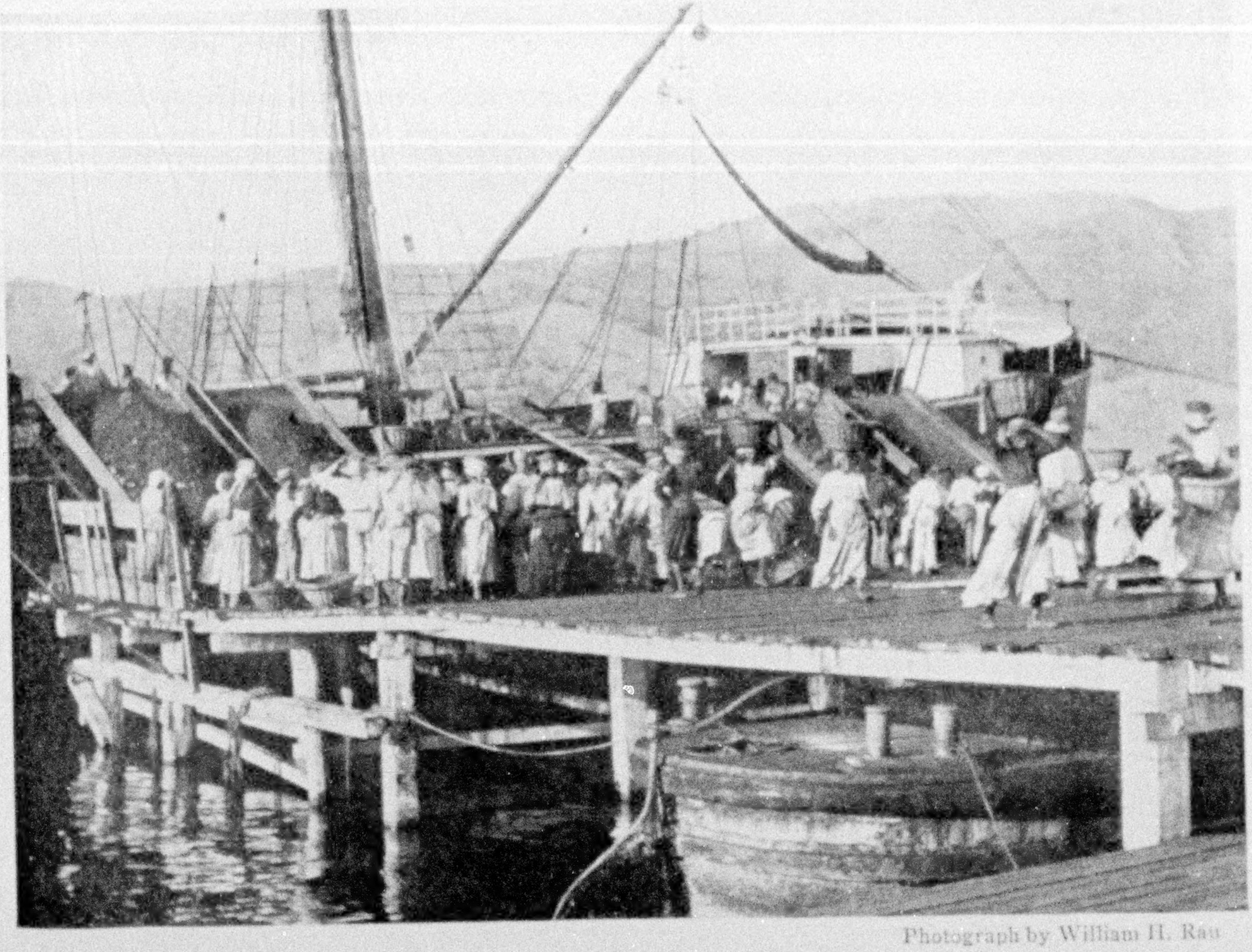
The result was that agriculture in St. Thomas fell into decay, and nearly all of the activities of the island's population were devoted to the interests of its harbor, and one of the finest coaling stations in the tropical world was established there. It has a length of 635 feet, with a breadth of 160 feet, and is inclosed on three sides by a solid stone and masonwork breakwater, built from 2 feet below ground to 7 feet above sea-level. More than 16,000 tons of coal can be stacked in it, and leading from the breakwater is a jetty where four vessels can coal at a time, thus affording striking facilities to steamers and ships of war which require their bunkers replenished with dispatch. Steamers drawing 17 feet of water can be coaled day or night at the rate of 100 tons per hour.

In addition to the coaling station there is a floating dry-dock and a marine slip,

THE TOWN OF CHARLOTTE AMALIE, ST. THOMAS, DANISH WEST INDIES (SEE PAGE 92)

Photograph by William H. Rau

CORNER OF MARKET-PLACE: CHARLOTTE AMALIE, ISLAND OF ST. THOMAS



Photograph by William H. Rau

NATIVE WOMEN COALING A STEAMER: ST. THOMAS, DANISH WEST INDIES

where splendid repair facilities are provided.

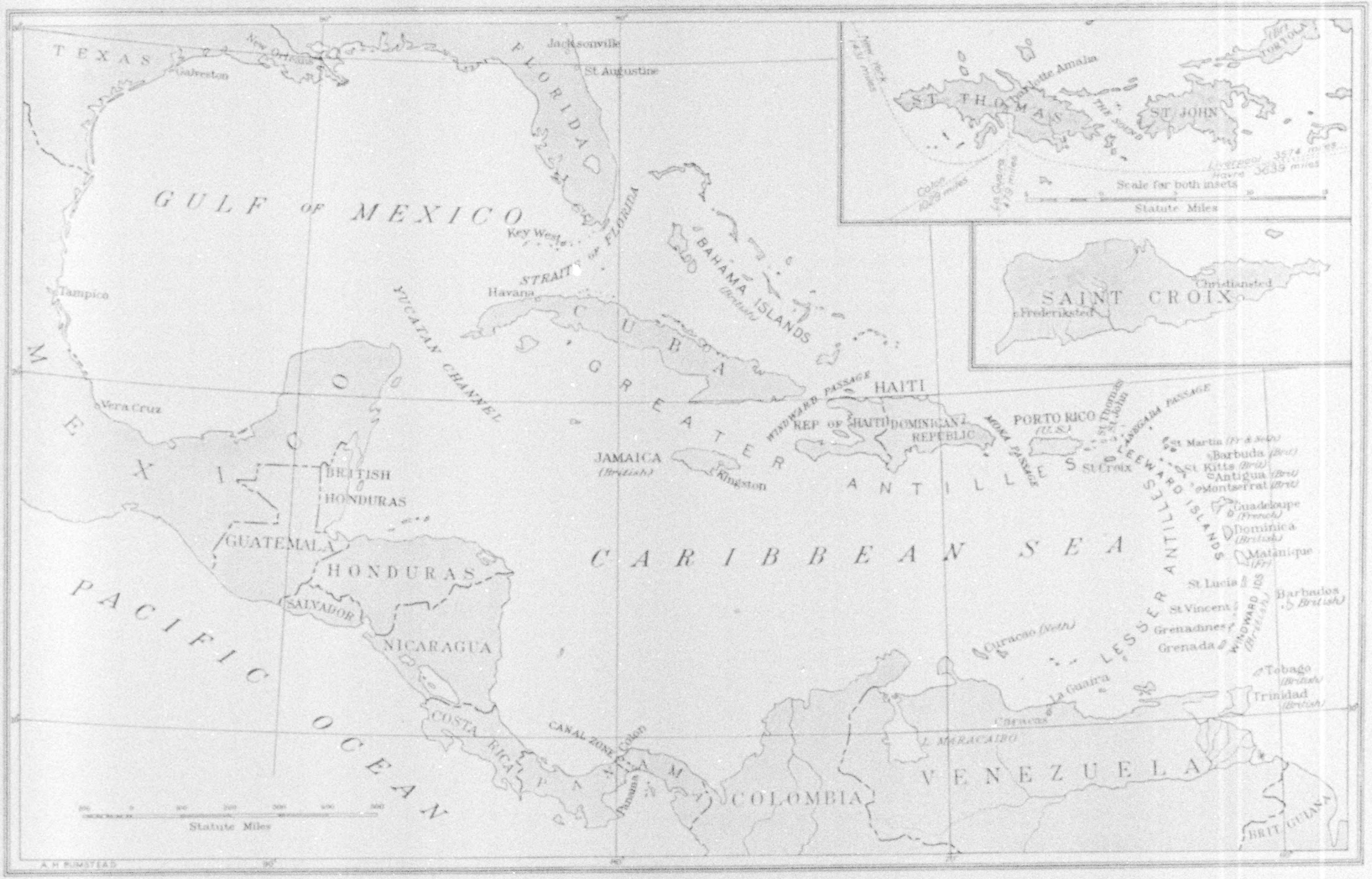
As long as these facilities were in demand St. Thomas was a fairly prosperous island. Men and women alike found it easy to get employment, at least for a part of the time, at what was to them a living wage, which was one cent per basket of coal, weighing from 85 to 100 pounds. Some carried as many as two or three hundred baskets during the four or five hours required to coal a ship. When not doing this work, they found considerable employment discharging coal from freighters which brought it to St. Thomas.

HARD HIT BY THE WAR

But then came the war in Europe and all was changed. The steamships of Germany, which made continual use of the harbor of St. Thomas, were driven from the seas, and today, where formerly all was business and enterprise, there is only now and then a ship that finds its way into port, and the people of St. Thomas, their agriculture neglected for years, find themselves unable to gain a living, either from the land or from the sea.

The harbor is completely sheltered (see page 90). Outside is a roadstead partly protected by an outlying island, which provides anchorage for a great number of ships. At its mouth the harbor is 900 feet wide, and one passes through this narrow neck into a beautiful basin, three-quarters of a mile in diameter, whose waters are seldom disturbed, however much the sea beyond may rage. A trade wind blows during the whole year, with the exception of the hurricane months—August, September, and October—when it becomes irregular and sometimes ceases to blow altogether. The greatest heat is experienced in August, September, and October; but even then it rarely rises above 91 degrees Fahrenheit, while at times it falls as low as 64 degrees.

On three sides of the harbor the mountains and their outlying foothills rise sharply from the water, leaving but a very narrow beach; so that the major por-



MAP SHOWING RELATIVE POSITION OF DANISH WEST INDIES (NEAR PORTO RICO)

tion of the town had to find room for expansion by climbing up the side of the mountain.

Just outside of and above the town are the two old towers, commonly known as Bluebeard's Castle and Blackbeard's Castle. Legend has it that here these daring old buccaneers had their headquarters and played their romantic rôles as "the hornets of the Spanish Main"; but history disputes legend, for it says that they were built by the Danish Government as a measure of defense in 1689.

By climbing the mountain to Amapolie, within easy walking distance of Charlotte Amalie, one can, on a clear day, get a view of Porto Rico, St. Croix, and Bequies. A little farther one reaches heights where views, unsurpassed in all the Caribbean region, may be had of Porto Rico to the west and the Lesser Antilles to the south.

The West Indian-Panama Telegraph Company has a cable office at Charlotte Amalie, and it was from this place that the world got so much of its news during the Spanish-American War, as well as during the Martinique disaster.

WE WILL BUY A LOTTERY

The governor of the colonies lives in Charlotte Amalie from October 1 to April 1, and in Christiansted, on the island of St. Croix, from April 1 to October 1. He is assisted by a Colonial Council, consisting of four members nominated by the Crown and eleven elected by the people. How well the population is represented may be judged by the statement that out of nearly 11,000 inhabitants, in 1891, only 200 were voters. There is no color line in St. Thomas, or in either of the other islands, for that matter, and the larger part of the population is of mixed blood.

The State Church is Lutheran, although all others are tolerated. The Catholic and Episcopal congregations are the largest. The former has established a fine school for girls. The Jews have a well-built synagogue, while the Moravians have long been doing an important work among the negroes of the island. The Dutch Reformed and Wesleyan churches have also been engaged in like work.

If the purchase of the islands is consummated, the United States will acquire an undesirable institution, known as the Danish West Indian lottery. How much the people of the islands appreciate this institution may be judged from the following statement by one of the leading residents: "Much has been said about the establishment of a lottery in the Danish West Indies. Those who consider it a form of gambling, detrimental to millions of the people, may cavil at it, but those who remember how these islands were once flooded with lottery tickets from other countries, many of them of shady reputation, can only be pleased at the establishment of our own, whose profits are to be used for the benefit of these islands, and which, at least, possesses the merit of keeping our money amongst ourselves."

AN AMERICAN GIBRALTAR

Naval officers declare that St. Thomas possesses advantages enabling it to be converted into a second Gibraltar. The structure of the island, with its long central ridge, having a general elevation of about 1,000 feet, with some points 1,500 feet, is especially fitted for the emplacement of fortifications commanding both shores at the same time, making it extremely difficult for an enemy to approach or obtain a foothold on the island. The elevated ground in the immediate neighborhood of the excellent roadsteads makes the question of harbor defense a comparatively easy one. While being near other islands, St. Thomas is practically in the open ocean, and permits entrance and egress of a fleet without being observed.

St. John, smallest of the three islands, with a good harbor in Coral Bay, is only 8 miles long and 4 miles wide in its broadest part. It has a population of less than 1,000; but it is an island that has done great service to America, for it is from here that come the leaves of the bay tree (*Pimenta acris*), from which that well-nigh indispensable toilet article for men, bay rum, is prepared. While most of the bay rum is made in St. Thomas, St. John produces most of the raw materials from which it is distilled.

This island once had many logwood trees on it, but they have almost entirely disappeared. Charcoal has long been in demand and the natives use logwood in

Photograph by William H. Rau

NATIVE WASHERWOMEN OF ST. CROIX

its manufacture. All of the islands have a striking variety of vegetation, 1,200 species having been counted on St. Thomas, and a proportionate number on St. John and St. Croix. The plantain, banana, sapodilla, bell apple, orange, mango, and lemon thrive. Sugar-cane flourishes when cultivated according to modern standards.

Communication between St. Thomas and St. John is maintained by several sloops. One of these has a history of more than a century in active service. It is the *Vigilant,* which has been, in turn, pirate, slave trader, and man-o'-war. Now she is a prosaic dispatch boat, carrying mail and cargo between the several islands.

ST. CROIX THE LARGEST

St. Croix is the largest, richest, and most populous of the three islands. It lies 40 miles south-southeast of St. Thomas, has an area of 84.25 square miles, and a population of approximately 20,000. It has much rich sugar land, more than 16,000 acres being devoted to that crop. It is purely agricultural, with a fine tropical climate, excellent scenery, good roads, and hospitable people. Here, as in the other islands, one hears perhaps more English spoken than any other tongue. The Danes have never attempted to interfere with the native preference for English and have never made Danish compulsory in the schools.

The island is perhaps more like "United States" than any other territory in the West Indian group. Before the days of Bermuda's ascendency as a winter resort, and of Palm Beach, the Riviera, and other places, many fashionable Americans journeyed to St. Croix to escape the cold. Also the children of the prominent families of St. Croix came to the United States to study, for the St. Croix planter admired America and her straight-from-the-shoulder way of doing things.

There are two towns in St. Croix—Christiansted and Frederiksted. The former is the seat of government, possessing the largest government house in

the Lesser Antilles. Fredericksted is the seat of business in the island, most of the sugar being exported from there. For scores of years the sugar planters, seeing that the United States is the greatest sugar-consuming community in the world, have hoped that the island might become American, thus providing them with a free market. In latter years the experience of the sugar planters of Porto Rico, who have grown very rich under the protection received by them as a result of American tariff laws, has stimulated this desire upon the part of those of the Danish West Indies.

The island has suffered, much as our own South has suffered in the past, from a lack of crop diversification; as everything in the South was for so many years cotton, so everything in St. Croix has been sugar, and the putting of all of its eggs in one basket has resulted seriously on many occasions. The Danish Plantation Company has sought to overcome this evil by introducing the planting of cotton, cocoa, coffee, and other crops.

The history of the Danish West Indies is full of interest. Columbus found St. Thomas inhabited by Caribs and Arawaks in 1493. In 1657 a colony of Dutch settlers occupied the island; but when they heard of New Amsterdam, now New York, they left it to become a part of the new colony with such a remarkable future ahead of it. The English came to St. Thomas next, but in 1666 it was formally taken over by the Danish crown. In 1764 the King of Denmark took the government into his own hands and threw the port of Charlotte Amalie open, duty free, to all nations. In 1801 the British took the island from the Danes, but restored it after ten months. Again, in 1807, Britain took possession of St. Thomas, but returned it in the readjustments growing out of the Napoleonic wars in 1815.

AN ISLAND OF MANY FLAGS

St. Croix was settled by Dutch and English, but they quarreled and the Dutch had to get out in 1650. The English in their turn were driven out by the Spaniards. Then the French from St. Kitts took a hand and expelled the Spaniards. France gave the island to the Knights of Malta; but after a prolonged, but losing, effort to put it on a profitable basis, the Knights, in 1720, demolished their forts, abandoned the island, and removed to Santo Domingo. In 1727 the French captured eight British vessels lying there and took possession of the island again, finally selling it to King Christian of Denmark.

The first proposal to buy the Danish West Indies was made by Secretary of State Seward at Washington, in January, 1865. July 17, 1866, the United States offered $5,000,000 for the islands. In 1867 Denmark declined to sell them for that amount, but offered St. Thomas and St. John for $10,000,000, or $15,000,000 for the three. Mr. Seward replied by offering $7,500,000 for the group. Denmark made a counter offer of St. Thomas and St. John for that price. Finally Secretary Seward accepted the proposal; but then Denmark insisted that the consent of the peoples of the islands should be formally given before the sale was consummated. This was at first objected to by Mr. Seward; but he finally cabled our minister to concede the question of vote, and on the 24th of October, 1867, the treaty was signed. On January 9, 1868, the election was held, and out of 1,139 votes cast there were but 22 against the cession. St. John was unanimous, casting 205 votes in favor and none against. Denmark ratified the treaty, but Senator Sumner, then chairman of the Committee on Foreign Relations, held the bill unreported for more than two years. When he did report it, it was adversely.

Again, in 1902, the United States suggested to Denmark that we would like to buy the islands, and although that country had seen one treaty fail of ratification after it had been proposed by the United States and ratified by Denmark, it took up the matter again and signed the treaty providing for the sale of the islands. The treaty agreed to transfer them upon the payment of the sum of $5,000,000. It failed of ratification by Denmark by only one vote. If the present treaty passes, that one vote will have cost the United States the sum of $20,000,000.

"Here's the tonic for you!"

Nature's formula combined with Campbell's.

No human chemist ever invented a "bracer" superior to the delicious recipe put up by nature in the juicy vine-ripened tomatoes used in

Campbell's Tomato Soup

All their valuable tonic and medicinal properties are retained by the Campbell method, while the other nourishing materials which we blend with nature's formula complete a soup as beneficial as it is tempting.

Summer is just the time when you need the healthful and appetizing stimulus of this wholesome Campbell "kind." Its regular use at this season will do the whole family a world of good.

21 kinds **10c a can**

Campbell's Soups

LOOK FOR THE RED-AND-WHITE LABEL

THE TAMING OF CAOUTCHOUC

ODAY Caoutchouc is your servant, mastered, trained to a thousand tasks.

Caoutchouc is always with you—in private and public, in sickness and health, through pleasures and trials, in work and play, from infancy to age—a daily help, comfort and necessity.

So perfect a servant is Caoutchouc that you barely realize the magnitude of the service; so accustomed a companion as rarely to cause notice. Yet were Caoutchouc to be suddenly taken from the world, the world would be suddenly set back to your great-grandfather's time—the time when Caoutchouc was still one of the wild, mysterious, unmanageable things of the Amazon jungles. For Caoutchouc, though old as the trees, is very young in service.

The taming of Caoutchouc is a romance of achievement—no less a romance because Caoutchouc's other name is Rubber.

God moves in a mysterious way, His wonders to perform. Of which this is an instance: back in the dark ages men fought with steel, fed themselves with bread and covered themselves with cloth, while rubber, made fit to use, has only been given to the last two or three generations.

Today rubber is one of the great necessities of life. It is a commodity, like any other, and calmly accepted as our rightful heritage. Yet by what a narrow margin of time is rubber ours! Through all the centuries it waited for the needs of a complex civilization and the ability of such a civilization to master it. That mastery came less than eighty years ago.

PROMISING, BUT—

When white men first saw South America, they saw the natives playing with balls made of rubber. Not long after, like children fascinated by a plaything of which they could only half sense the possibilities, other white men brought rubber home with them. Its qualities and properties were obvious. But it had a fault. Shoes made of rubber were soft and sticky in hot weather, and in cold weather grew hard and easy to crack. It was this fault that had to be overcome, and it was in this particular that rubber long remained as untamed and unmanageable as ever.

In spite of its shortcoming, however, rubber was not unused, even in the old, crude state. From our present viewpoint, living in an age when rubber has come into its own, some of the old-time uses are most amusing. It would be absurd, nowadays, to think of sending shoes to South America to have them waterproofed, but that was actually done, and not infrequently. Folks sent their shoes on that long journey by sailors, who had them dipped in rubber to the end that their owners could walk dry and more comfortably.

MASTERED BY GOODYEAR

Charles Goodyear tamed rubber—halter-broke it, as it were. He had been trying for years to process it in some way so that it would stand extremes of cold and heat. After many failures success came, as success sometimes does, by accident. He happened to drop some rubber mixed with sulphur on a hot stove. And thus vulcanization was discovered.

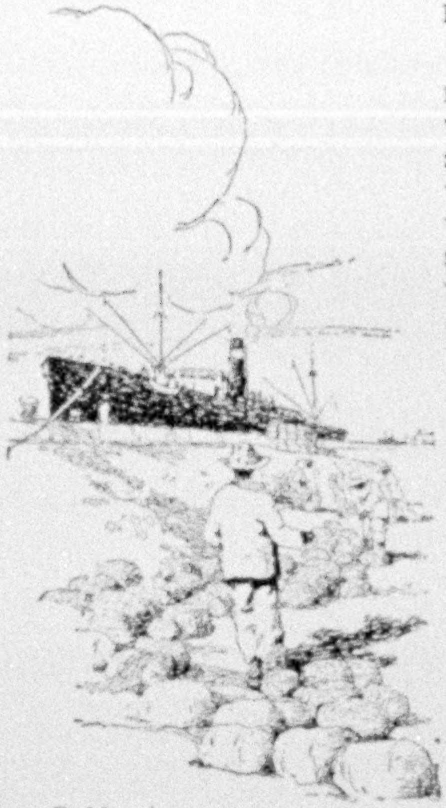
That was in 1839. It took Goodyear three years to perfect the process and to find anybody who would invest money in it. On such a slender thread—accident and a man's persistence in spite of disappointment—hung the development of the material that has since so vitally affected civilization.

It was Goodyear's unfortunate lot that his labors

Copyright 1918 United States Rubber Company

were not rewarded in material riches. He was never connected with a single successful company which manufactured vulcanized rubber. In England he was unable to interest capital. In France a company which he organized soon failed, and he was imprisoned for debt. In America he was content to license others to manufacture under his patents.

Charles Goodyear's reward is fame, written indelibly in history. So great has been the appreciation of the rubber industry for his wonderful invention, that a number of individual rubber goods manufacturers have incorporated his name in theirs. Thus there are today, for instance, "Goodyear's India Rubber Glove Manufacturing Co." and "Goodyear's Metallic Rubber Shoe Co.," both manufacturing rubber boots and shoes, and both integral parts of the United States Rubber Company.


Rubber is shipped in "Biscuits."

L. CANDEE & CO. FIRST LICENSED

In 1842 Goodyear granted to Leverett Candee, of New Haven, a license to manufacture under his newly perfected process of vulcanization. With Henry and Lucius Hotchkiss, the firm of L. Candee & Co. was formed to manufacture rubber shoes. This was the first license Goodyear granted—74 years ago. The firm of L. Candee & Co. is still in existence as one of the large units of the United States Rubber Company, and the descendants of Henry and Lucius Hotchkiss are now active in the affairs of the latter company.

So Goodyear gave rubber, halter-broken, to the world. That in itself was a wonderful gift and a great achievement. And not less great has been the ingenuity, the planning and the toil by which industry has harnessed rubber and trained it to perform the multitude of tasks you know of. Not only were the problems of adaptation and manufacturing tremendous; the public was at first suspicious.

The first rubber shoes made by L. Candee & Co. were made over straight lasts—there were neither rights nor lefts. Mr. Downs, their salesman, used to carry these shoes around from store to store in baskets, and the doubting retail dealers would only accept them to be sold on commission.

How far the development and the acceptance of rubber have traveled in the short, fast-moving three-quarters of a century since then! To what an extent it has become part of our lives! To be deprived of rubber now would turn our existences upside down. Picture such condition of affairs

IMAGINE A RUBBERLESS WORLD

Without rubber overshoes and raincoats, the first rainy day would find us all unprotected against the wet. The lawn would wait for showers and the garden would have to be watered with a sprinkling can. The body's chill would no longer know the solace of the rubber spine bag or hot water bottle; the fever, the blessing of an ice bag.

The automobile would stand unused, for nobody has yet found a satisfactory substitute for rubber tires. Mother, at home, without jar rings, would no longer be able to preserve fruits and vegetables. Father, at the office, could no longer snap a rubber band around his papers. Jimmy's stockings would always be down around his ankles, for there would be no elastic bands to make garters of—and Jimmy wouldn't stand the pressure of bands that were not elastic. Little Susie would never know the ecstacy of mothering a rubber doll, and the baby would have to take nourishment every three hours from a spoon. Without rubber for the laundry wringer rolls, the weekly wash would grow from a problem to a calamity.

How sport would suffer! Without rubber-soled tennis and sport shoes, without tennis and golf balls, and without rubber bladders for footballs and punching bags, the world would be a drab place, indeed. Even the good old game of jackstones would be nothing but a memory. Imagine a child without a rubber ball!

THE COMMUNITY LOSS

The functions of rubber goods in medicine and surgery are vitally important. Infection and suffering would increase enormously with its loss. Rubber fire hose is still the mainstay of the fire department, and the fire department is one of our last lines of defense. Rubber gaskets, washers and packings in pumps and valves play an essential part in supplying you water and all power which turns all wheels which produce all things. You have hardly a manufactured article, these days, in the production of which rubber does not take a hand. Man-made harbors are opened and kept open by the grace of rubber sleeves on dredging pipes. The world's business correspondence is conducted on typewriters with rubber platens. The world's news is proclaimed in newspapers, in the printing of which a rubber blanket could not be replaced. Air and steam drills eat into the earth that great tunnels and

building foundations may be made; air and steam riveters clinch the rivets that hold together the vast skeletons on which skyscrapers are built—and to all of these air and steam is conducted through rubber hose. Electricity can be conducted in many places only because wire can be insulated with rubber. An immense proportion of the belts that carry power from source to point of use are made of rubber over canvas.

The list grows long, yet it is but partly representative of the dependence our modern civilization has learned to place on rubber.

To meet all these demands there has grown up a tremendous industry, dedicated to the purpose of supplying every need for rubber. Into the taming and training of Caoutchouc, the universal servant, have gone millions on millions of dollars and some of the best brains of modern times. In the very beginnings of rubber as a commodity, a little rubber eraser cost seventy-five cents. Today you can buy one anywhere for a nickel. And in that comparison you have the measure of efficiency which the importers and manufacturers of rubber have applied.

Tapping a rubber tree.

Even before Goodyear's discovery of vulcanization, companies had been organized to make rubber shoes, carriage cloth and other products in which rubber occupied a conspicuous place. Following straightway on the heels of the granting of patents on Goodyear's process, several of these and other newly organized firms obtained licenses to manufacture under that process.

OLDEST MANUFACTURERS OF RUBBER GOODS

Among these were, in 1840, the National India Rubber Co., of Providence, a firm which at first bought molded rubber shoes that came from Para stuffed with rice hulls, and stretched them over lasts to cure; in 1842, L. Candee & Co.; in 1843, Goodyear's Metallic Rubber Shoe Co.; in 1844, the Meyer Rubber Co. and the Goodyear's India Rubber Glove Manufacturing Co.; in 1853, the Malden Mfg. Co., later the Boston Rubber Shoe Co.; in 1874, The American Rubber Co. These firms have grown, added to their lines, perfected their methods of manufacture, and have joined together along with the Banigan Rubber Co., the Lycoming Rubber Co., the Woonsocket Rubber Co., the Fabric Fire Hose Co., the G and J Tire Co., the Hartford Rubber Works Co., the Mechanical Rubber Co., Morgan & Wright, the New York Belting & Packing Co., Limited, the Peerless Rubber Manufacturing Co., the Revere Rubber Co., the Sawyer Belting Co., and the Stoughton Rubber Co.—all, with some others, forming the United States Rubber Company, the largest manufacturers of rubber goods in the world.

Thus the United States Rubber Company, now operating the amazing total of 47 factories, harks back in its ancestry to the oldest rubber manufacturers in existence—one of them having been founded seventy-four years ago.

It is not uncommon for some one to wonder what is going to happen in rubber. There have been violent fluctuations in the prices of crude rubber, and there have been rumors of rubber shortages. Will such things seriously affect the public in the future?

That question finds its answer in the size, scope, activities and integrity of the United States Rubber Company. This great System is not only to be known as a manufacturer, but as an organization operating in every department to provide the best rubber products at uniform prices—a large contract, but one which is already being fulfilled.

THE GREATEST PLANTATION

Fluctuations in rubber supply and price have, in the past, been due fundamentally to the source. As long as rubber is procured through native sources from South America, such fluctuations may be expected. But the United States Rubber System has provided for a future secure against these conditions. Six years ago it purchased over 90,000 acres in Sumatra, and has devoted this extensive plantation to the cultivation of the best quality rubber. Commensurate with the size of the Company itself, this is the largest plantation in existence. It represents an investment to date of approximately nine millions of dollars—invested that the quality, the price and the supply of rubber may be stabilized.

Nearly half of this plantation, 43,500 acres, is already planted to 5,600,000 rubber trees. Over a million of these trees are already being tapped. The great enterprise is moving forward with the utmost precision—a vast project in which 14,000 Coolies are employed, and in which the rate of planting is 5,200 trees per day.

Such a plantation is a work of time. Trees cannot produce rubber until they are five years old, and do not come into full bearing until still later. The United States Rubber System is building for future generations.

AN IMMENSE, WELL-BALANCED MACHINE

The prosperity of the United States Rubber Company, and hence its ability to continue serv-

ing the public well, does not depend on the continued demand for automobile tires or any other one product. It is active in every field where rubber is a factor. And to each it carries the same measure of efficiency.

The products of the United States Rubber Company are divided into these principal classes—clothing (raincoats of rubber, rubberized fabrics and cravenette goods), footwear (rubber shoes and boots, overshoes, tennis and outing shoes), tires, druggist sundries, and mechanical and molded rubber goods (which include practically everything not included in the other classifications).

These products are sold by the Company in practically every part of the civilized world. To make them and sell them, more than 35,000 people are given employment, exclusive of the labor on the Sumatra plantation. Forty-seven factories in all make U. S. Rubber goods—a floor space of over 8,300,000 square feet, equivalent to 191 acres.

It requires more than 58,000 horse power, exclusive of water power, to produce the U. S. Rubber goods to supply the earth's demands; and to transport a year's production of these goods needs more than 15,000 freight cars, or a train over 112 miles long. The members of the selling organization of the United States Rubber System travel 15,000,000 miles in a single year. And the result of their traveling is this: one hundred and eighty-nine U. S. Rubber branches (a hundred and seventy-five of them in this country) and thousands upon thousands of stores have U. S. Rubber goods to supply a waiting world.

The Company deals in more than rubber. In many of its products are cotton ducks, drills, sheetings, etc., and of these it consumes over 55,000,000 yards a year—a yardage that would cover 31,250 miles.

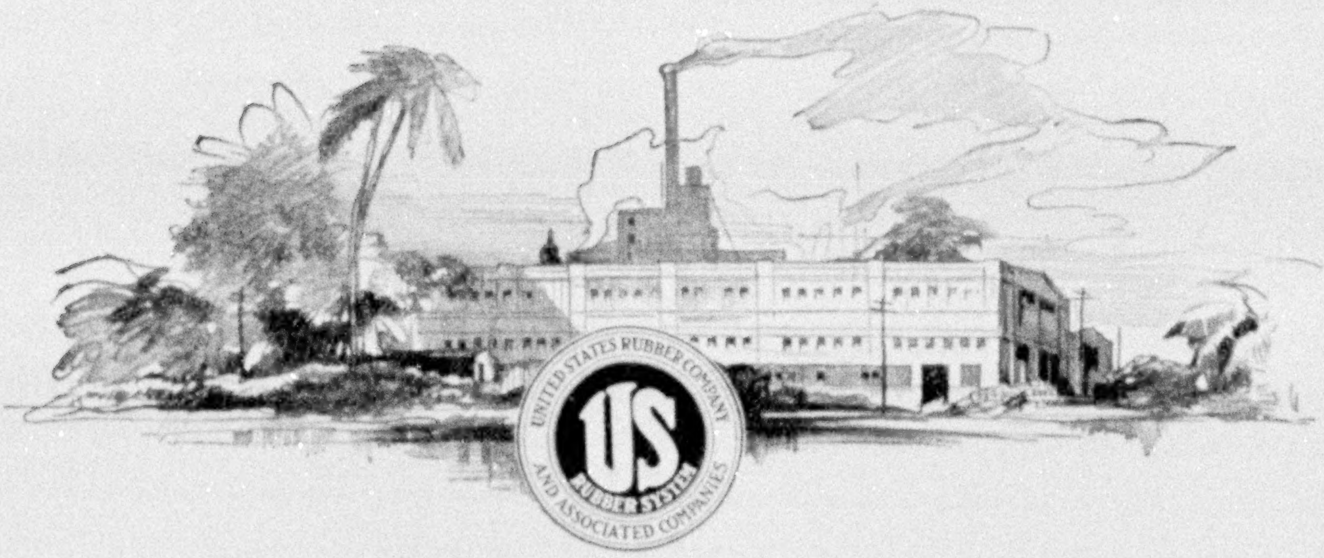
AN IMMENSE OUTFLOW

A single figure will visualize for you the volume of the torrent of finished goods that pour constantly out of the United States rubber factories. In one year, recently, these factories made over 50,000,000 pairs of shoes—a pair for every other person in the United States.

From time to time you will see new uses made of rubber. The Development Department of the United States Rubber Company is constantly working toward that end. And there are chemists and other technical men in each factory, safeguarding the buyers of U. S. Rubber goods by the most critical chemical and physical tests of materials.

Throughout, from the operating and executive heads in New York to the men in the various plants and branches, is a spirit of sincere resolve. They have grown up in the rubber industry. Their world is rubber. Their problem is rubber.

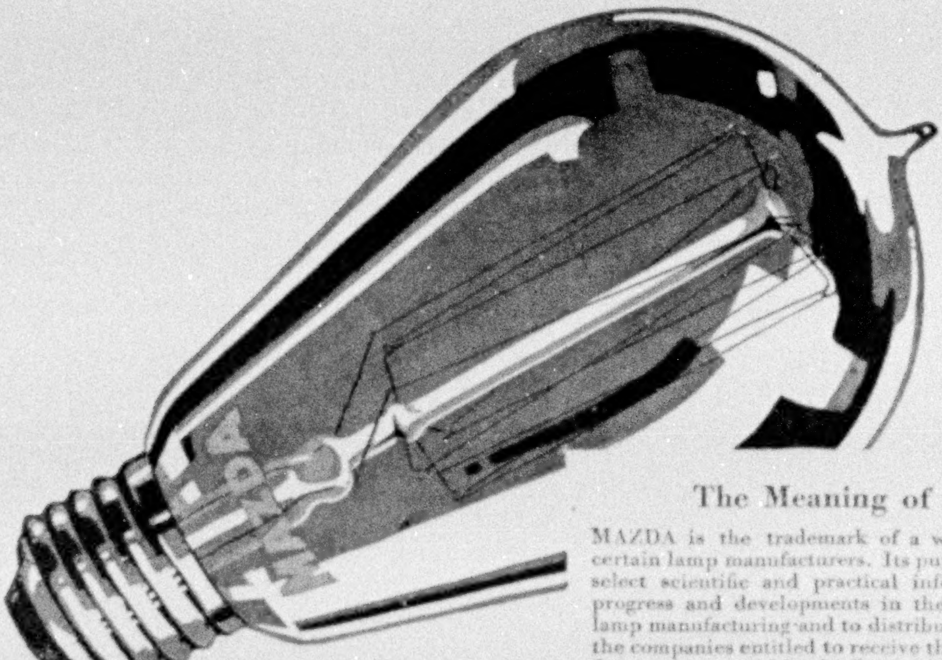
The United States Rubber Company has grown to be great because the people have willed that it be great, and this they have willed because the service of the United States Rubber Company shines out through the services of Caoutchouc, the servant.



MAZDA

"Not the name of a thing, but the mark of a service"

MAZDA Service is the hub—MAZDA lamp manufacturers the spokes—in the wheel of incandescent lamp progress



The Meaning of MAZDA

MAZDA is the trademark of a world-wide service to certain lamp manufacturers. Its purpose is to collect and select scientific and practical information concerning progress and developments in the art of incandescent lamp manufacturing and to distribute this information to the companies entitled to receive this Service. MAZDA Service is centered in the Research Laboratories of the General Electric Company at Schenectady.

The mark MAZDA can appear only on lamps which meet the standards of MAZDA Service. It is thus an assurance of quality. This trademark is the property of the General Electric Company.

RESEARCH LABORATORIES OF GENERAL ELECTRIC COMPANY

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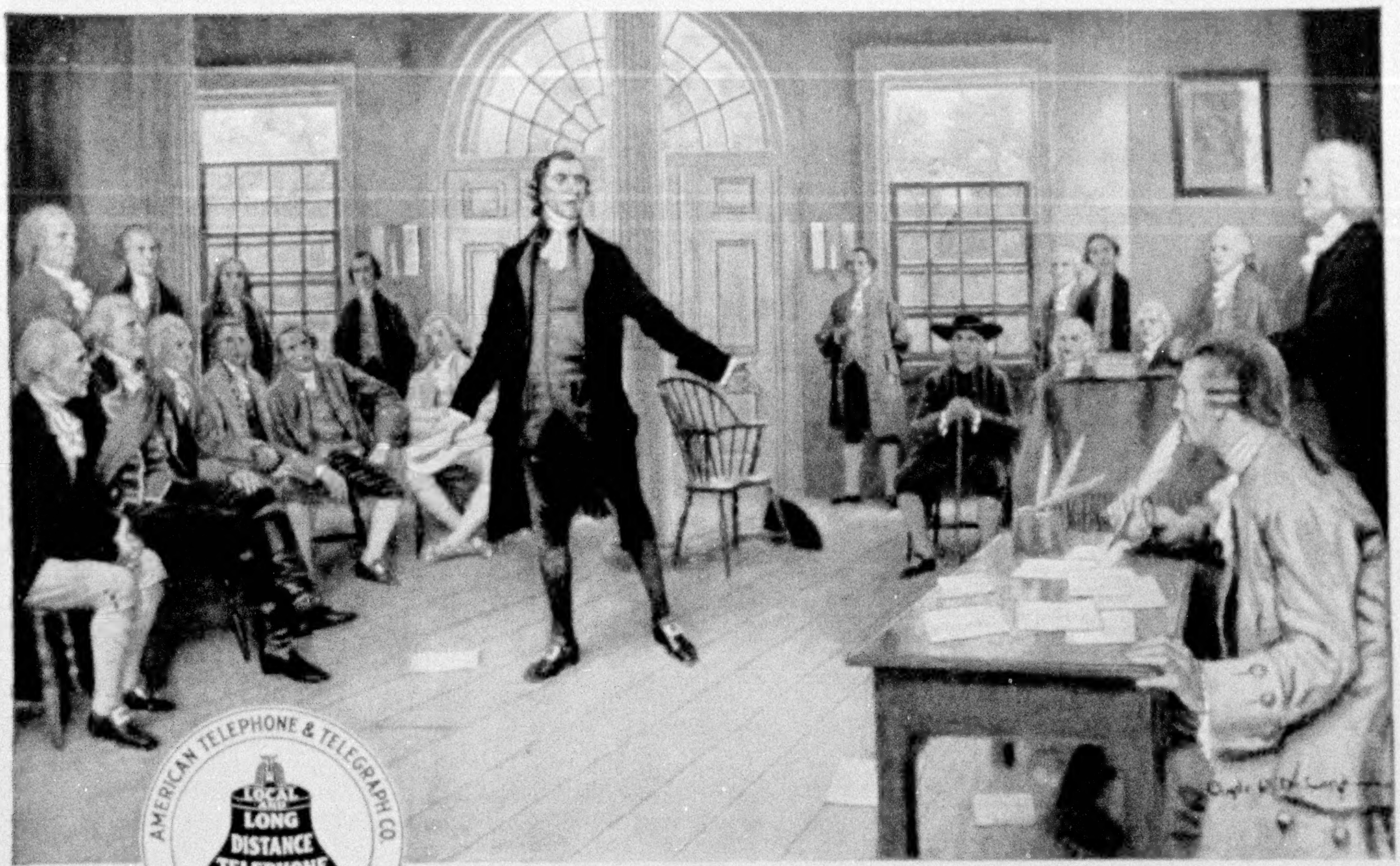

AMERICAN TELEPHONE & TELEGRAPH CO.
LOCAL AND LONG DISTANCE TELEPHONE
BELL SYSTEM
AND ASSOCIATED COMPANIES

Patrick Henry Addressing the First Continental Congress, Philadelphia, 1774

One Nation; One People

WHEN Patrick Henry declared that oppression had effaced the boundaries of the several colonies, he voiced the spirit of the First Continental Congress.

In the crisis, the colonies were willing to unite for their common safety, but at that time the people could not immediately act as a whole because it took so long for news to travel from colony to colony.

The early handicaps of distance and delay were greatly reduced and direct communication was established between communities with the coming of the railroads and the telegraph. They connected places. The telephone connects persons irrespective of place. The telephone system has provided the means of individual communication which brings into one national family, so to speak, the whole people.

Country wide in its scope, the Bell System carries the spoken word from person to person anywhere, annihilating both time and distance.

The people have become so absolutely unified by means of the facilities for transportation and communication that in any crisis they can decide as a united people and act simultaneously, wherever the location of the seat of government.

In the early days, the capital was moved from place to place because of sectional rivalry, but today Independence Hall is a symbol of union, revered alike in Philadelphia and the most distant American city.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

XUM

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Coming or Going, Wear B.V.D. For Coolness

MANY a man, who used to dread Summer, now welcomes it, because of cool, comfortable B.V.D. It makes going-away enjoyable and staying-at-home endurable. It has been called "The Biggest Contribution To The Summer Comfort Of Man."

Loose fitting, light woven B.V.D. Underwear starts with the best possible fabrics (specially woven and tested), continues with the best possible workmanship (carefully inspected and re-inspected), and ends with complete comfort (fullness of cut, balance of drape, correctness of fit, durability in wash and wear).

If it *hasn't* This Red Woven Label

MADE FOR THE
B.V.D.
BEST RETAIL TRADE

It *isn't* B. V. D. Underwear

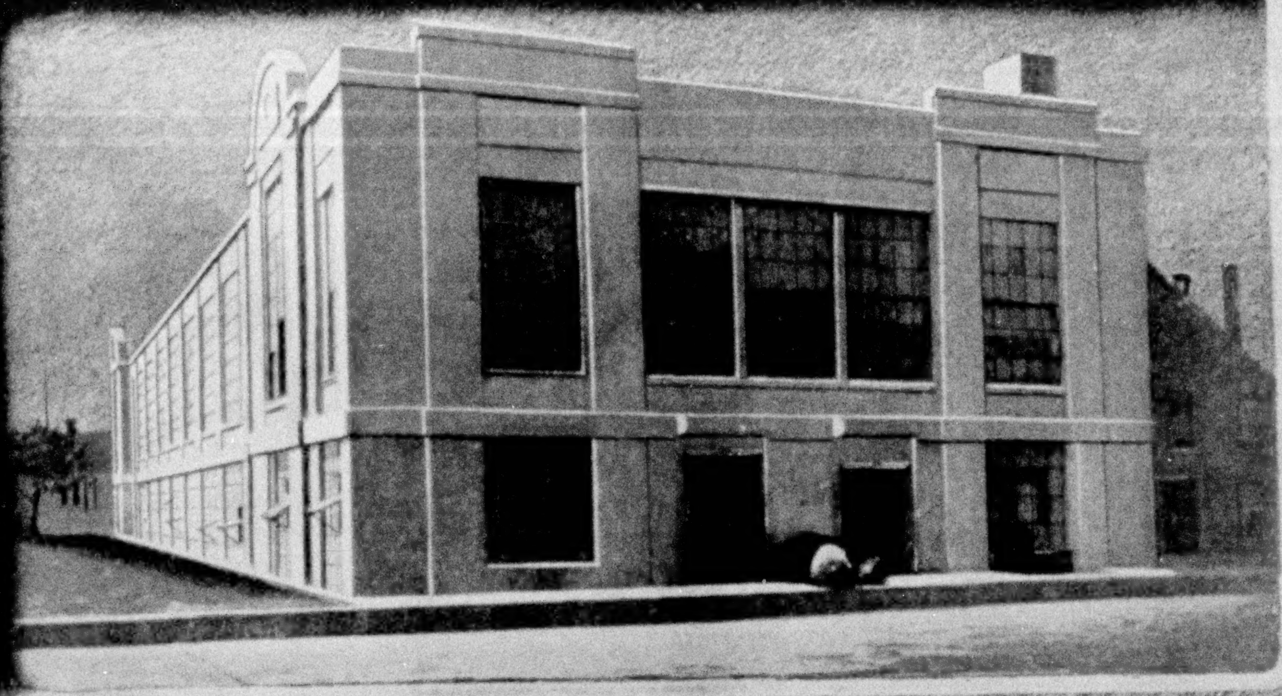
(Trade Mark Reg. U. S. Pat. Off. and Foreign Countries)

B.V.D. Closed Crotch Union Suits (Pat. U. S. A.) $1.00 and upward the Suit.

B.V.D. Coat Cut Undershirts and Knee Length Drawers, 50c. and upward the Garment.

The B.V.D. *Company, New York.*

CONCRETE FOR PERMANENCE



L H Gilmer Company Cotton Belting Philadelphia Bart Tourison *Architect*

Concrete for Economy

Economy, in the use of reinforced concrete for industrial buildings, shows in the cost of erection—which is lower than steel and almost as low as mill construction. But the great saving appears *after* your factory is completed—in lower insurance rates, lower maintenance, and in the lower operating costs that come from better working conditions for employees—better air, light and sanitation.

These advantages, combined with permanence and fire protection, have induced manufacturers in over 125 different industries to build in reinforced concrete.

Information for Business Men

We have a 246-page book on reinforced concrete for industrial buildings, showing costs, illustrations and descriptions of many noted factories. This book will help you determine, in consultation with your architect, the advantages of reinforced concrete for your new plant. It is free on request—use the coupon below.

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Name and Address ______________________

Firm Name ______________ Name of my Architect ______________

Judge This Value
For Yourself

Men's tastes in cigars differ. If they did not there would be no reason for growing so many different tobaccos. Because men disagree in what makes a good smoke, I ask them to try mine thoroughly before they buy. So many men have found that their taste agrees with mine, that I am able to let all try "J. R. W." panetelas without buying a single cigar. You are to judge for yourself FREE.

EXACT SIZE

A Cuban Leaf

Several years ago I had only the same interest in tobacco that all smokers have. During a trip to Cuba my attention was called to a leaf that grew in the famous Vuelta district of the island. It made up into a deliciously cool, sweet smoke, and on my return I imported a small amount for my personal use. My friends soon found out what a valuable discovery I had made and insisted that I furnish them with some of the same delightful cigars. I now import each year the cream of the crop. In 40 years of smoking I have not found the equal of my "J. R. W." cigars. Last year I supplied more than 2,000,000 cigars to men whose taste agreed with mine.

Smoke Five Free

If my "J. R. W." were sold in stores you would pay 10c. straight for them.

Through me you get the lowest price at which such cigars could possibly be sold. I am going to pay for your first five. Send me only 10c. to cover packing, postage, and revenue, enclose your business card or letterhead, and I will send you the cigars at once, prepaid. When you have smoked five, mail me a check for the box and I will replace the five smokes. My price is $5 per hundred, $2.60 for fifty. Send today for the free cigars.

J. ROGERS WARNER

153 Lockwood Building Buffalo, N. Y.

STRANGE PLACES

THERE are few to the traveler who uses Wells Fargo Travelers Checks.

For the wide-spread Wells Fargo organization, with its 35,000 employees, is at his service, to advise, inform and assist.

They are sold in denominations of $10, $20, $50, $100 or $200, at a premium of one-half cent on each dollar, with a minimum charge of ten cents.

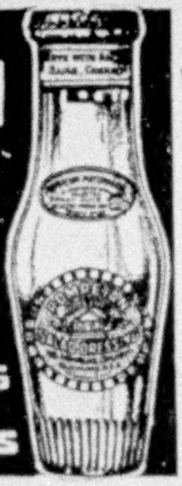
The Express Service of Wells Fargo is immediate, personal and safe. Try it for your packages.

WELLS FARGO
Travelers Checks

Ask the nearest Wells Fargo man or send to 51 Broadway, New York, for booklet "Travel Funds."

TRY A BOTTLE OF POMPEIAN OLIVE OIL SALAD DRESSING

A MAYONNAISE OF SURPASSING DELICIOUSNESS AT ALL GROCERS



Prepared with fresh Pompeian Olive Oil, selected eggs and vinegar, perfectly spiced

"SEE-BY-NIGHT"

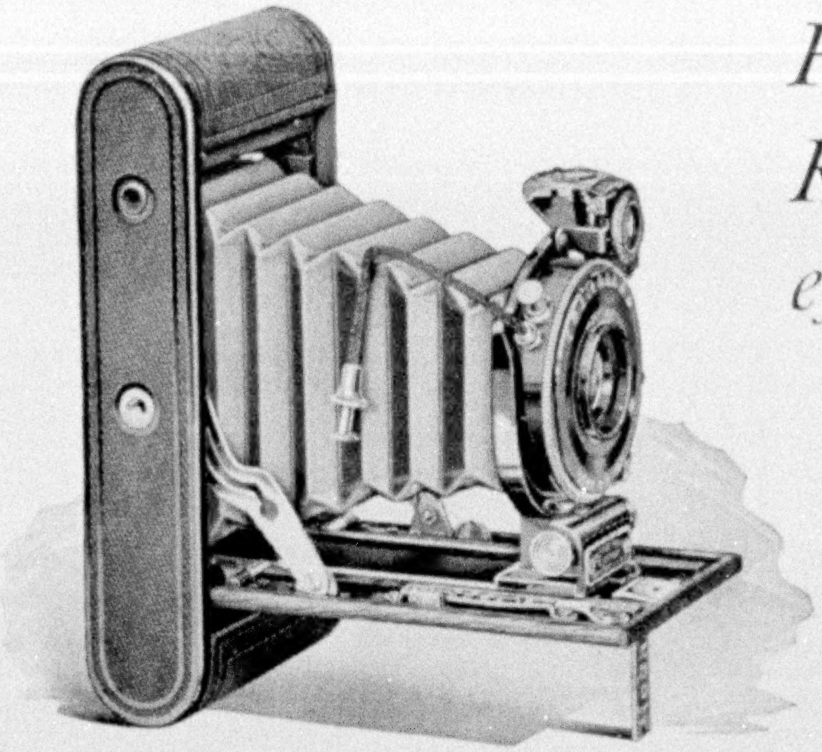
A double-duty compass for motorists, hunters, travelers, fishermen, etc.

Easily read at night (as well as by day). Permanently luminous North and South points.

Floating jeweled aluminum dial; gold-filled hunting case; dial automatically lifted off point when case is closed, preventing unnecessary wear. Guaranteed accurate forever.

Sold by the better class opticians and scientific instrument dealers. If dealer hasn't them, remit $5 direct to us. Send for Compass Folder C-8 or 10c. for book, "The Compass, the Sign Post of the World."

Taylor Instrument Companies
ROCHESTER N.Y.
Makers of Scientific Instruments of Superiority



Here is true KODAK efficiency.

YOU can make a photograph with a pin hole for a lens. Cheap cameras have small lenses, with correspondingly small openings—but fast enough for snap-shots in a good light. As you get into the better grades, the lenses grow larger.

True efficiency requires a lens of fairly long focus that will work with a large opening—a big lens in a big shutter. That's the kind you find in the No. 1 Autographic Kodak *Special*. And with it a shutter that has a speed up to 1/300 of a second. *Here is true efficiency with nothing sacrificed to mere littleness.*

And in every detail of construction and finish this little camera shows evidence of having come from the factory where honest workmanship has become a habit.

No. 1 Autographic Kodak Special, for 2¼ x 3¼ pictures, Optimo shutter with variable speeds from one second to 1/300 of a second, also time action, with Kodak Anastigmat lens *f*.6.3, focal length 4⅜ inches. Price, $40.00.

EASTMAN KODAK COMPANY,

At your dealer's. ROCHESTER, N. Y., *The Kodak City.*

RED GUM

THE HOTEL STATLER, DETROIT, MICHIGAN
GEORGE B. POST & SON, Architects

THE NEW HOTEL STATLER

was built by a man who has had a great career as a successful hotel man, and when he erected his new hotel at Detroit he brought to it his wide experience and mature artistic judgment.

The typical trim throughout this fine hotel is RED GUM.

In its artistic appointments—its furnishings and the cabinet work which so beautifully harmonizes with it, the dominant period is that established by Robert Adam, 1728-1792.

Not a single detail, however minute, was neglected by the owner, the architect and the decorator to make this building beautiful, and the use of RED GUM, "America's Finest Cabinet Wood," was entirely natural.

LET US TELL YOU WHERE YOU CAN SEE SOME FINE RED GUM TRIM IN YOUR NEIGHBORHOOD.

Gum Lumber Manufacturers Association

1311 Chamber of Commerce Bldg. Memphis, Tennessee

DEAF?

Read What Dr. Harnden Says About the

1916 Acousticon

R. Sayor Harnden, M.D., writes us—"The 1916 ACOUSTICON recently received is so perfect as to be almost a new invention. My use of various models for years has shown me that the relief and joy of those who talk with the deaf is perhaps the strongest evidence of the value of your marvelous instrument."

The unstinted praise of 250,000 satisfied customers and many letters like the above from eminent physicians lead us to urge you and every deaf person, entirely at our risk, without a penny of expense, to give the 1916 ACOUSTICON a thorough trial in your own home, absolutely and entirely

No Deposit FREE No Expense

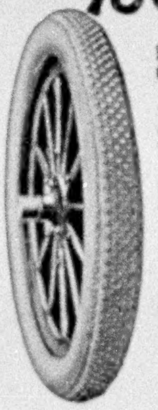
All you need to do **is to write saying** that you are **deaf** and will try the ACOUSTICON The trial will not cost you one cent, for we even pay delivery charges.

WARNING! **There is no good reason why everyone should not make as liberal a trial offer as we do, so do not send money for any instrument for the deaf until you have tried it.**

The ACOUSTICON has improvements and patented features which cannot be duplicated, so no matter what you have tried in the past, send for your free trial of the ACOUSTICON today and convince yourself—you alone to decide. Address

GENERAL ACOUSTIC CO., 1311 Candler Bldg., New York
Toronto, Ont. Office, Royal Bank Bldg.

Don't Throw Away Your Worn Tires



For over three years European motorists have been getting from 10,000 to 15,000 miles out of their tires by "half-soling" them with Steel Studded Treads

In eight months 20,000 American motorists have followed their example and are **saving $50 to $200 a year** in their tire expense.

We ship on approval Without a cent deposit **prepay the express** and allow you to be the judge. **Durable Treads** double the life of your tires and are sold under a **signed guarantee for 5,000 miles without puncture.** Applied in your own garage in thirty minutes.

Special Discount offered to motorists in new territory on first shipment **direct from factory.** A postal will get full information and sample within a week. **State size of tires. Don't wait--write today.** Address the nearest office.

The Colorado Tire & Leather Company
737 Tread Bldg., Denver, Colorado
G37 Transportation Bldg., Chicago
720-377 Woolworth Bldg., New York

INSIST ON THE GENUINE

Shur-on

EYEGLASSES·SPECTACLES

LOOK FEEL QUALITY GUARANTEE **RIGHT**

Look for the name "Shur-on" in the bridge
$2.50 and Up

E. KIRSTEIN SONS COMPANY
ROCHESTER, N. Y. Established 1864

DISTINGUISHED TIRES

• •

SILVERTOWN Cord Tires have been *scarce!*

(They are not yet so plentiful as to be "Common.")

Many special Machines had to be invented, developed, perfected, and *built*, before we could produce "Silvertown Cord" Tires up to the spontaneous demand for them.

Many large Orders, from leading Car-Manufacturers, had therefore to be *refused* (with very great regret.)

But,—Silvertown production-capacity has been *multiplied*, by the B. F. Goodrich Co., during the past six months.

We are now ready for large, and quick, expansion.

Thus far, the Cars listed herewith have been *Prestiged* and *Distinguished* by adoption of the genuine Silvertown CORD Tires as their standard equipment.

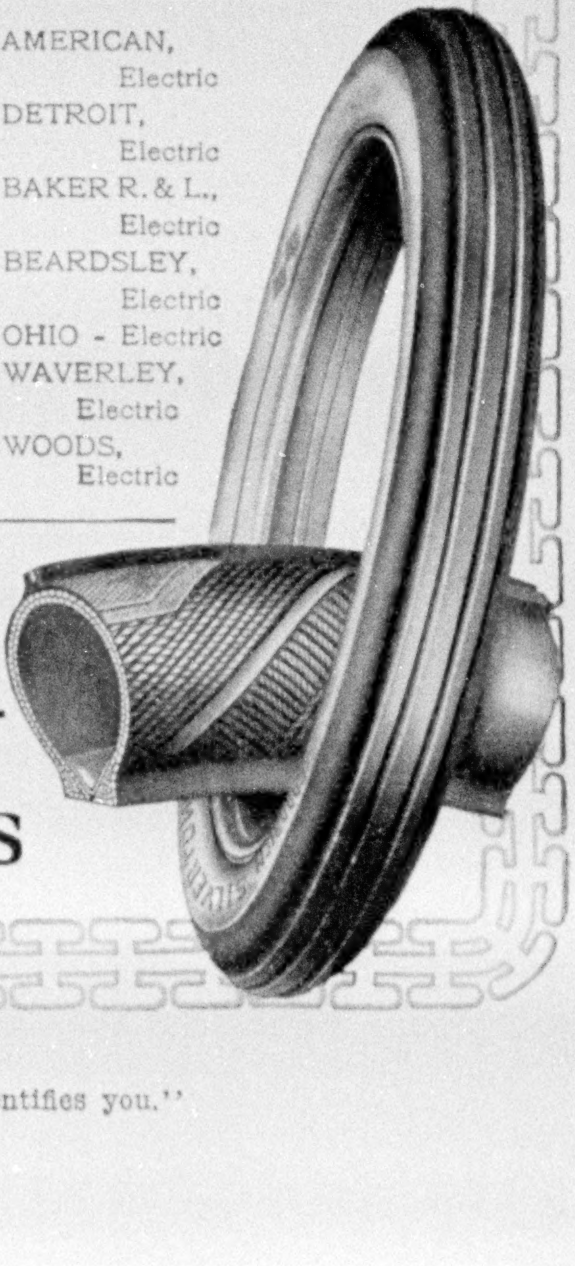
Standard equipment on following Cars:

CUNNINGHAM - Gasolene
FRANKLIN - - Gasolene
LOCOMOBILE - Gasolene
McFARLAN - - Gasolene
MURRAY - - - Gasolene
MARMON - - - Gasolene
OWEN MAGNETIC, Gasolene
PEUGEOT - - - Gasolene
PIERCE-ARROW, Gasolene
SIMPLEX-CRANE, Gasolene
STANLEY (Touring), Steam
STUTZ (Bull-dog), Gasolene
WHITE - - - - Gasolene
WINTON, Model 48, Gasolene

AMERICAN, Electric
DETROIT, Electric
BAKER R. & L., Electric
BEARDSLEY, Electric
OHIO - Electric
WAVERLEY, Electric
WOODS, Electric

GOODRICH

Silvertown— Cord Tires



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A real Guarantee

To be more than a mere scrap of paper, a guarantee must be absolute—and backed by a concern able and willing to make good.

The General's guarantee on CERTAIN-TEED Roofing is not only absolute; it is backed by the world's largest roofing and building paper mills, making one-third of all the roll roofing made in America.

The guarantee is for 5, 10, or 15 years, according to ply (1, 2, or 3). This guarantee is possible because the roofing is thoroughly saturated with the General's own blend of soft asphalts, and then coated with a harder blend which keeps the inner saturation soft and prevents drying-out.

CERTAIN-TEED is made in rolls; also in slate-covered shingles. There is a type of CERTAIN-TEED for every kind of building, with flat or pitched roof, from the largest sky-scraper to the smallest out-building.

CERTAIN-TEED is sold by responsible dealers all over the world, at reasonable prices.

General Roofing Manufacturing Company

World's Largest Manufacturers of Roofing and Building Papers.

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7-16 (Write your address)

"Mention the Geographic—It identifies you."

Motoring Masses Coming to Cords

TWO-THIRDS of all the new cars being equipped by the makers with cord tires are going out on Goodyear Cord Tires. But a growth even more striking than that is taking place.

Goodyear Cord Tires are standard equipment on the Franklin, the Packard Twin Six, the Locomobile, the Peerless, the White and the Haynes Twelve.

But you will also see them widely used now on cars like the Hudson, Stutz, Velie, Buick, Hupmobile, Chevrolet, Apperson, Dodge Brothers, Kissel, Oakland, Jackson, Oldsmobile, Chandler, Paige, and so on.

Simply because owners have learned that any good car gains in looks, in power-saving and gas-mileage, and in smooth riding, through Goodyear Cords.

Oversize, flexibility, and resiliency combine in these tires to produce real riding luxury by absorbing most of the jolt and jar of travel; to give unusual freedom from tire trouble; and to work economies by giving long service, and by saving power and fuel.

Their flexibility and resilience enable them to absorb road shocks without danger of stone-bruise and blow-out; add miles per gallon; assist in a quicker get-away; and make the car coast farther when power is shut off.

The oversize is very marked, and provides an increased cushion of air, which serves to emphasize the easy-riding and the other good qualities built into Goodyear Cord Tires.

The Goodyear Tire & Rubber Company
Akron, Ohio

Double-thick All-Weather and Ribbed Treads, for rear and front wheels. The deep, sharp All-Weather grips resist skidding and give great traction. The Ribbed Tread assists easy steering.

No-Hook and Q. D. Clincher types, for gasoline and electric cars.

Goodyear Tires, Tubes and Tire Saver Accessories are easy to get from Goodyear Service Station Dealers everywhere.

Mechanical Theories *versus* Truck Performance

There are four different types of final drive in motor trucks being advocated by their makers. Each has its merits—and demerits. It is impossible for the purchaser to determine their comparative values. He cannot reconcile the conflicting claims of rival engineers.

The wise buyer brushes aside mere theories of construction and selects the make which holds the record for performance. That is the only value he can know and the only value he can use. The White Truck record is reflected in its predominant annual sales—2 to 1 of any other make.

THE WHITE COMPANY, *Cleveland*

Largest Manufacturers of Commercial Motor Vehicles in America

PRE EX-
NVMERO CELLENTIA

LOCOMOBILE

Closed Cars

The 1917 advance styles are now on exhibition. The new Coach Work is carried nearer to the ground resulting in a lower step, greater convenience, and smarter appearance.

Interiors are by Miss Elsie de Wolfe, a leading authority in decoration, who has selected a wide variety of beautiful fabrics of exclusive pattern and special weave. The effects are quiet and rich—all being accomplished in the simplicity and perfect taste for which this artist is famous.

The production of these luxurious vehicles is carefully restricted in order to devote much time to each individual car. Practically every car is different. Prices of special Coach Work, fully equipped and ready for delivery from $5600. to $6800.

THE LOCOMOBILE COMPANY OF AMERICA

Makers of Fine Motor Cars

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LOOKING TOWARD 1917

we announce that the SIX-CYLINDER TYPE OF POWER PLANT will be continued, as the most efficient. This decision by our engineering staff follows thorough tests and observation of motor experiments and tendencies in Europe and this country. It is the policy of The Pierce-Arrow Motor Car Company to build cars, under the direction of skilled engineers, that embody the utmost in service and luxury. And to sell these cars at a price fairly determined by their cost.

THE PIERCE-ARROW MOTOR CAR CO · BUFFALO N Y

PIERCE-ARROW

PRESS OF JUDD & DETWEILER, INC.